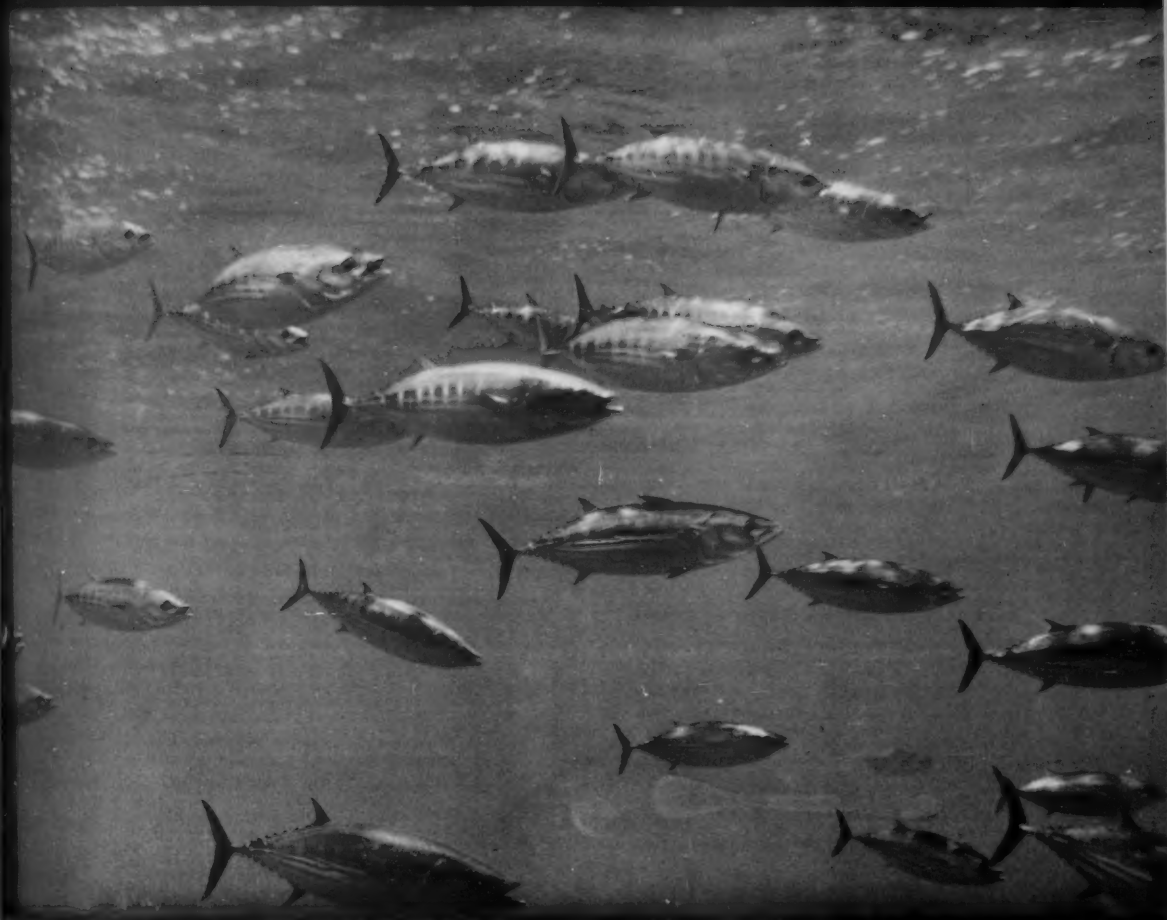


COMMERCIAL FISHERIES **REVIEW**

THE UNIVERSITY
OF MICHIGAN

SEP 28 1959



Vol. 21, No. 9

SEPTEMBER 1959

FISH and WILDLIFE SERVICE
United States Department of the Interior
Washington, D.C.

UNITED STATES
DEPARTMENT OF THE INTERIOR

FRED A. SEATON, SECRETARY

FISH AND WILDLIFE SERVICE

ARNIE J. SUOMELA, COMMISSIONER



COMMERCIAL FISHERIES REVIEW



BUREAU OF COMMERCIAL FISHERIES

DONALD L. MCKERNAN, DIRECTOR

DIVISION OF INDUSTRIAL RESEARCH
AND SERVICES

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A review of developments and news of the fishery industries
prepared in the BUREAU OF COMMERCIAL FISHERIES.

Joseph Pileggi, Editor
H. M. Bearse, Assistant Editor

Mailed free to members of the fishery and allied industries. Address correspondence and requests to the: Chief, Branch of Market News, Bureau of Commercial Fisheries, U. S. Department of the Interior, Washington 25, D. C.

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The printing of this publication has been approved by the Director of the Bureau of the Budget,
May 21, 1957. 5/31/60

CONTENTS

COVER: Underwater photograph of a school of skipjack in the Central Pacific taken from an observation chamber on board the U. S. Bureau of Commercial Fisheries research vessel Charles H. Gilbert. The observation chamber is a special blister built into the hull aft, below the water line and the fishing racks. The Bureau's Honolulu Biological Laboratory biologists are studying the behavior of skipjack tuna in the Central Pacific. This photograph was taken on July 13, 1959, 10-12 miles south of Barber's Point, Oahu, Hawaii. The fish had a mean length of 22 inches and ranged from 19 to 27 inches, or from 5 to 15 pounds.

Storage Life of Pink Shrimp Held in Commercial and in Jacketed Cold-Storage Rooms, by John A. Peters and Daniel T. Mc Lane
Surinam Fishery Explorations, May 11-July 31, 1957, by James B. Higman

	Page		Page
RESEARCH IN SERVICE LABORATORIES:	16	TRENDS AND DEVELOPMENTS (Contd.):	
Development of Standards for Pacific Coast Fishery	16	Great Lakes:	
Products	16	Pickerel Fluctuations Being Studied	30
TRENDS AND DEVELOPMENTS:	18	Sea Lamprey Control Studies	31
Alaska:		Great Lakes Fisheries Exploration and Gear Research:	
Biologists Produce Large Run of Young Red Salmon in		Exploratory Fishing in Lake Erie Continued (M/V	
Research Lake	19	Active Cruise 2)	31
King Salmon Sport Fisheries in Southeastern Alaska to		Great Lakes Fishery Investigations:	
be Studied	19	Survey of Southeastern Lake Superior by M/V <u>Cisco</u> .	32
Record Number of Taku River King Salmon Captured		Western Lake Erie Biological Research Continued	
by Fish Wheel	19	(M/V <u>George L. Cruises 3 and 4</u>)	33
California:		Western Lake Superior Fishery Survey Continued (M/V	
Aerial Census of Commercial and Sport Fishing Con-		<u>Siagowat Cruise 2</u>)	34
tinued (Airplane Spotting Flights 59-9 and 59-10) . .	20	Gulf Exploratory Fishery Program:	
Barracuda and White Sea Bass Survey off Baja Cali-		Underwater Observation of Shrimp Trawl (M/V <u>Charles</u>	
fornia and Southern California Continued (M/V <u>N. B.</u>		<u>M. Bowers Cruise 20</u>)	35
<u>Scotfield Cruise 59S3</u>)	21	Gulf of Mexico:	
Pelagic Fish Population Survey off Coast of Southern		Industrial Fishery Studies	35
and Central California Continued (M/V <u>Alaska</u>		Iowa:	
<u>Cruises 59A4 and 59A5; Airplane Spotting Flights</u>		Regulations on Commercial Fishing on the Mississippi	
<u>59-8 and 59-11</u>)	22	River Enforced	36
Tuna Tagged Between Southern Mexico and Peru (M/V		Maine Sardines:	
<u>Constitution Cruise 59C1</u>)	24	Canned Stocks, June 1, 1959	36
Canned Fish:		Massachusetts Schools' Workshop Morning Session De-	
Consumer Purchases, May 1959	25	voted to Maine Sardines	36
Cans--Shipments for Fishery Products, January-May		Maryland:	
1959	25	Oyster Spat Count on Test Shells, 1959 Season	37
Central Pacific Fisheries Investigations:		North Atlantic Fisheries Exploration and Gear Research:	
Albacore Tuna Migrations in North Pacific Studied by		Promising Catches of the Deep-Water Red Crab Made	
M/V <u>Hugh M. Smith (C-52)</u>	26	by M/V <u>Delaware (Cruise 59-7)</u>	37
Behavior Studies of Skipjack Tuna to be Made During		North Pacific Exploratory Fishery Program:	
Hawaiian Summer Fishery	27	Exploratory Fishing Vessel to Assess Fishery Poten-	
Tagging Returns Indicate Skipjack Tuna Migrate into		tial and Collect Oceanographic Data in Arctic Ocean's	
Hawaiian Waters from the West	27	Chukchi Sea (M/V <u>John N. Cobb Cruise 43</u>)	38
Federal Purchases of Fishery Products:		Outdoor Recreation Resources Review Commission:	
Department of Defense Canned Salmon Requirements		First Advisory Council Meeting Held	39
for Fiscal Years 1960 and 1961	27	Oysters:	
Department of Defense Purchases, January-June 1959		Long Island Sound Studies	40
Fisheries Loan Fund:	27	Raft-Grown Type Grow Fast	40
Loans Approved Through June 30, 1959	28	Setting Under Artificial Conditions	41
Fishing Vessel and Gear Development:		Salmon:	
Equipment Note No. 1--New All-Aluminum Salmon Gill-		Progress Report on North Pacific Research	41
Net Boats Built for Alaska Fishery, by Fred Wathne		Shad:	
Frozen Foods:	29	Atlantic Coast Studies	42
Proposed Handling Code	30		

Contents Continued Page 121.

COMMERCIAL FISHERIES REVIEW

September 1959

Washington 25, D.C.

Vol. 21, No. 9

STORAGE LIFE OF PINK SHRIMP HELD IN COMMERCIAL AND JACKETED COLD-STORAGE ROOMS

By John A. Peters* and Daniel T. McLane**

ABSTRACT

Tests were conducted to determine the frozen storage life of pink shrimp held at 0° F. to -5° F. in a commercial-type cold-storage room and in a jacketed cold-storage room. Use of the jacketed storage room resulted in a significant extension of the storage life.

INTRODUCTION

Information on the keeping quality of frozen shrimp is needed by industry for the establishment of inventory and marketing practices that will enable it to supply the consumer with products of uniformly high quality. This information is also required in developing standards and specifications for government purchases of this product.

One problem in the storage of frozen foods, including frozen pink shrimp (*Penaeus duorarum*), is that of dehydration. During frozen storage, moisture tends to sublime from the food and to condense on the surface of the evaporator coils in the cold-storage room. Over a period of time, the product may lose so much moisture in this manner as to become unpalatable.

Several approaches have been proposed for the solution of this problem. Among these are (1) to use glazes on unpackaged products, (2) to use packaging materials having very low moisture vapor transmission rates, or (3) to increase the relative humidity of the air in the storage room. The relative humidity can be most easily increased by enlarging the area of the surfaces used to cool the room. In a jacketed type of cold-storage room maximum cooling surface area is provided by cold air circulating through an enclosed jacket which completely surrounds the product storage space (Young 1952; Lentz 1955; Butler, Slavin, Patashnik, and Sanford 1956; Slavin, Peters, and Pottinger 1958). This provides a high relative humidity, and sublimation of moisture from the food thus is minimized.

The practice of industry now is to hold shrimp at 0° F. to -5° F. The objective of the present study therefore was to determine the keeping quality, at these tem-

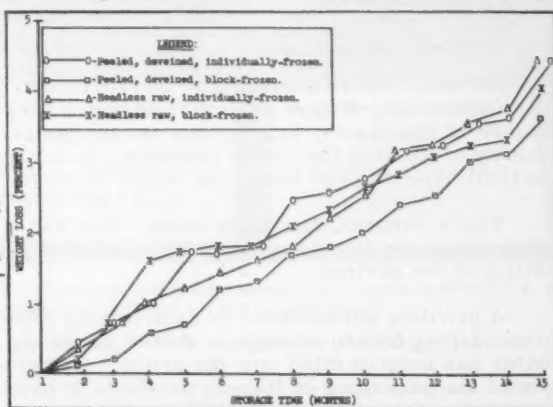


Fig. 1 - Average percentage weight loss in commercial packages of shrimp stored at 0° to -5° F. in a commercial-type cold-storage room.

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peratures, of commercial packages of pink shrimp held in a commercial-type frozen-storage room and of those held in a jacketed one.

SAMPLES STORED IN A COMMERCIAL-TYPE STORAGE ROOM

Frozen pink shrimp are marketed in a number of different styles of packs, the principal ones being (1) headless raw shrimp (shells on) and (2) peeled and deveined

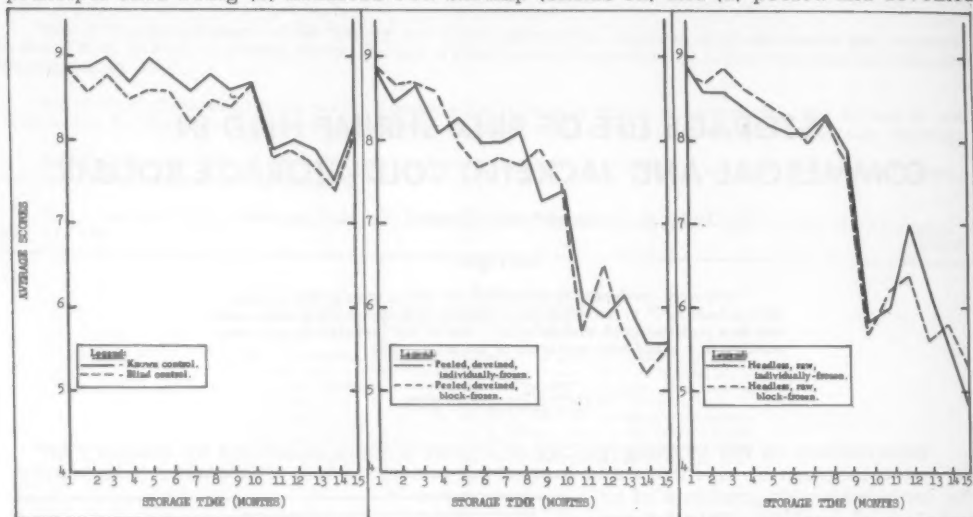


Fig. 2 - Average taste-panel scores for commercial packages of shrimp stored in a commercial-type cold-storage room.

raw shrimp. These shrimp may be frozen and glazed individually or in block form. The individually-frozen shrimp appeal to a large portion of the buyers because any amount of the shrimp thus frozen can be removed from the package without the necessity of thawing the entire contents. In our study of the samples held in the commercial-type storage room, the effect of these variations in pack were investigated.

Two measurements were made. One was a determination of the loss in weight of the packages in storage, and the other was a determination of the change in palatability of the shrimp.

A problem encountered in determining changes in palatability of a food which occur during frozen storage is that of providing a reference sample so that the taste tester can keep in mind how the product tasted originally. Stansby (1955) has suggested the packaging of fishery products in hermetically-sealed tins as a method of preserving the original palatability. In the preparation and storage of control samples for use in the present experiment, advantage was taken of this and of the fact that frozen foods change least when held at very low temperatures.

The details of the experiments and the results are given in the following subsections.

PREPARATION OF SAMPLES: The shrimp used in this study were packed using typical commercial packaging materials and were frozen in a modern shrimp plant in Tampa, Fla., under the supervision of a member of the Laboratory.

The individually-frozen samples consisted of peeled and deveined or headless raw shrimp that were frozen on trays in a blast freezer, glazed by dipping in fresh water, and packed in 2½-pound-size one-piece waxed paperboard cartons. These

cartons were overwrapped with waxed, opaque, bleached sulfite paper. The block-frozen samples consisted of peeled and deveined or headless raw shrimp that were packed in 2½-pound-size one-piece waxed paperboard cartons. Water was then added; the cartons were overwrapped with waxed, opaque, bleached sulfite paper; and the packaged shrimp were frozen in a blast freezer. The packages of individually-frozen and block-frozen shrimp were stored for several days at 0° F. in the processing plant. They were then packed with dry ice in insulated shipping containers and sent to the laboratory at East Boston by air freight. The samples were still solidly frozen when received at the Laboratory, where they were removed from the shipping containers and put in storage at 0° F. to -5° F.

A control sample was prepared by repacking some of the headless raw individually-frozen and glazed shrimp from the original cartons into No. 10 C-enamel cans. The cans of shrimp were filled with fresh water (cooled to 35° F.), sealed under 27 inches of vacuum, and frozen to -25° F. in the Laboratory's blast freezer.

STORAGE OF THE SAMPLES: The control sample was stored at -25° F. The commercial packages of individually-frozen and block-frozen shrimp were stored at 0° F. to -5° F. in a commercial-type cold-storage room with overhead evaporator plates. The relative humidity of this storage area, as measured with an electric hygrometer, varied from 70 to 80 percent. Sufficient samples were put in storage to permit monthly tests for a period of 15 months.

WEIGHT-LOSS TESTS:

The loss in weight of the package gives a quantitative indication of the amount of dehydration that has taken place. The test can be made with considerable precision.

PROCEDURE:

At the beginning of the storage period and each month during the test, the commercial packages of block-frozen and individually-frozen shrimp were weighed in the storage room using a beam balance accurate to 1.0 gram.

RESULTS: The average percentage weight loss of the various samples during 15 months storage is shown in figure 1. Both of the individually-frozen samples showed a weight loss of 4.4-percent; the block-frozen samples showed a 4.0-percent weight loss for the headless raw shrimp and 3.5 percent for the peeled and deveined shrimp. The slightly greater weight loss of the individually-frozen and glazed samples may be due to the larger amount of product surface area that is exposed and the larger amount of air space within the package as compared with the block-frozen samples.

PALATABILITY TESTS: Although palatability tests cannot be made with precision, owing to the human factor, they nevertheless are needed to give a practical interpretation of the weight loss tests. Palatability tests indicate the point where dehydration results in a noticeable change in palatability.

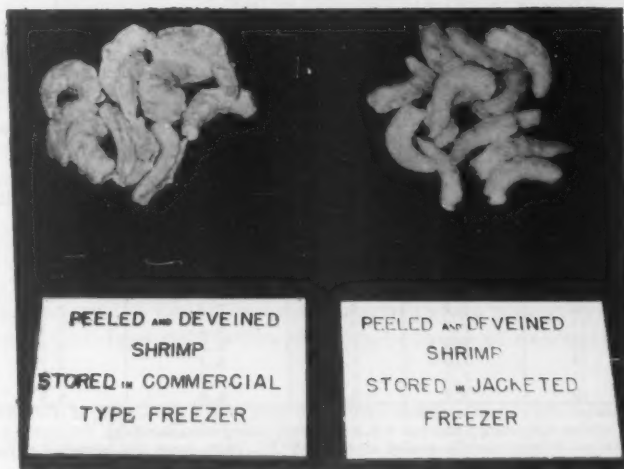


Fig. 3 - Appearance of frozen shrimp stored for 9 months at 0° to -5° F. in a commercial-type freezer and in a jacketed freezer.

PROCEDURE: Two packages of shrimp from each sample were removed from storage at monthly intervals, examined in the frozen state for dehydration, and then cooked for evaluation by a taste panel comprised of eight members of the laboratory staff. Preliminary taste tests were conducted to acquaint the panel with this product.

Prior to each taste test, the frozen shrimp were thawed in running cold water. The headless raw samples were peeled. Each lot of shrimp then was cooked for 5 minutes in slightly salted boiling water and was cooled in the chill room (35° F.) for serving to the taste panel. At each taste test, four samples were served to the panel. The panel was instructed to compare the quality of three unknown samples with a known -25° F. control sample (known control). As a check on the accuracy of the panel, another of the -25° F. control samples was included as one of the three unknown. This sample was referred to as the blind control. Each sample was scored by the eight taste panel members for appearance, odor, flavor, texture, and over-all quality. The samples were rated by the panel on a scale of excellent, very good, good, fair, borderline, slightly poor, poor, very poor and inedible. In calculating the results, numerical values from 9 = excellent to 1 = inedible were assigned and the gross average score of the five quality factors for each sample was calculated.

Table 1 - Average Taste-Panel Scores on Commercially-Packaged Samples of Shrimp Stored at 0° to -5° F. in a Commercial-Type Cold-Storage Room						
Storage Time	Average Taste-Panel Scores ^{1/}					
	Known Control ^{2/}	Blind Control ^{3/}	Peeled, Deveined, Individually Frozen, and Glazed	Peeled, Deveined, Block-Frozen, and Glazed	Headless Raw Individually-Frozen and Glazed	Headless Raw Block-Frozen and Glazed
<u>Months</u>						
1	8.9	8.9	8.9	8.9	8.9	8.9
2	8.9	8.6	8.5	8.7	8.6	8.7
3	^{4/} 9.0	8.8	8.7	8.7	8.6	8.9
4	8.7	8.5	8.1	8.6	8.4	8.7
5	^{5/} 9.0	8.6	8.3	8.0	8.2	8.5
6	8.8	8.6	8.0	7.7	8.1	8.3
7	8.6	^{4/} 8.2	8.0	7.8	8.1	8.0
8	8.8	^{5/} 8.5	8.1	7.7	8.3	8.3
9	8.6	8.4	7.3	7.9	7.9	7.6
10	8.7	8.7	7.4	7.5	5.8	5.7
11	7.9	7.8	6.1	5.7	6.0	6.2
12	8.0	7.9	5.9	6.5	7.0	6.4
13	7.9	7.7	6.2	5.7	6.2	5.6
14	7.5	7.4	5.6	5.2	5.5	5.8
15	8.2	8.1	5.6	5.5	4.9	5.3

^{1/} Scores of 9 = excellent, 8.0 - 8.9 = very good, 7.0 - 7.9 = good, 6.0 - 6.9 = fair, 5.0 - 5.9 = borderline (should not be marketed), and 4.0 - 4.9 = slightly poor (unmarketable).
^{2/} Stored in hermetically-sealed cans at -25° F. Taste panel was informed of the identity of this sample.
^{3/} Same as known control but identity was not revealed to taste panel.
^{4/} Preference became significant at 5-percent level of probability.
^{5/} Preference became significant at 1-percent level of probability.

RESULTS: The average taste-panel scores for the various samples are given in table 1. In figure 2 these data are plotted to show the trend of the loss in quality of the shrimp during frozen storage. The curves show a gradual decrease in quality of the commercial samples of shrimp during the first 9 months of frozen storage followed by a much faster rate of quality loss after this point.

Application of the rank test for significance of differences (Kramer 1956) to the average scores given by the taste panel to the various samples shows that (1) the preference for the known-control samples over the commercial samples became significant at the 5-percent level of probability after 3 months of frozen storage and at the 1-percent level of probability after 5 months and that (2) the preference for the blind control sample over the commercial samples became significant at the 5-percent level of probability after 7 months of frozen storage and at the 1-percent level of probability after 8 months. These results indicate that no appreciable difference existed between the control samples stored at -25° F. and the commercial samples stored at 0° F. to -5° F. until after the seventh or eighth month of frozen storage because the taste panel was unable to distinguish, with statistical significance, the quality difference between the blind control and the commercial samples until after that period of storage had elapsed.

The marked change in taste-panel scores after the ninth month of frozen storage corresponds to the development of excessive dehydration of the shrimp in the commercial packages. At this time, the commercial samples of block-frozen and individually-frozen shrimp were considered to be of unmarketable quality because of their very poor appearance. It was found, however, that the dehydrated shrimp rehydrated to such an extent during water thawing and cooking that they were acceptable to the taste panel.

The control samples stored at -25° F. in hermetically-sealed containers showed an increase in rate of quality loss after 10 months of frozen storage but were

Table 2 - Average Taste-Panel Scores on Commercially-Packaged Samples of Shrimp Stored at 0° to -5° F. in a Jacketed Storage Room or Commercial-Type Still-Air Storage Room

Storage Time	Known Control ^{2/}	Blind Control ^{3/}	Average Taste-Panel Scores ^{1/} on Samples of Peeled, Deveined, Individually-Frozen and Glazed Shrimp Stored at 0° to 5° F. in	
			Jacketed Storage Room	Commercial-Type Storage Room
Months				
9	8.6	8.4	4/8.1	7.3
12	8.0	7.9	5/7.6	5.9

1/ Scores of 9 = excellent, 8.0 - 8.9 = very good, 7.0 - 7.9 = good, 6.0 - 6.9 = fair, 5.0 - 5.9 = borderline (should not be marketed), and 4.0 - 4.9 = slightly poor (unmarketable).
 2/ Stored in hermetically-sealed cans at -25° F. Taste panel was informed of the identity of this sample.
 3/ Same as known control but identity was not revealed to taste panel.
 4/ Preference over sample stored in commercial-type storage room is not significant.
 5/ Preference over sample stored in commercial-type storage room is significant at 1-percent level of probability.

still of good-to-very-good quality at the fifteenth month of frozen storage (the end of the test). Packaging shrimp in a hermetically-sealed container and storing them at a temperature of -25° F. therefore resulted in at least a 6 months increase in keeping quality over that of commercially-packaged shrimp stored at 0° to -5° F.

CONCLUSIONS: (1) The average weight loss of commercial packages of pink shrimp stored in a commercial-type cold-storage room at 0° to -5° F. was from 1.8 to 2.5 percent after 9 months and from 3.6 to 4.4 percent after 15

months. Slightly higher losses occurred in the individually-frozen and glazed samples.

(2) Commercial samples of peeled and deveined or headless raw pink shrimp, frozen individually or in block form, were of unacceptable quality after 9 months of 0° to -5° F. storage in a commercial-type cold-storage room because of excessive dehydration.

(3) No significant differences in storage life were attributed to the style of pack employed in the commercial samples of peeled and deveined or headless raw pink shrimp that were frozen individually or in block form.

(4) Pink shrimp packed in hermetically-sealed containers and stored at -25° F. were of good quality for at least 6 months longer than were pink shrimp that were packed in commercial packages and stored at 0° to -5° F. in a commercial-type cold-storage room.

SAMPLES STORED IN A JACKETED STORAGE ROOM

Owing to the tendency of taste testers to become fatigued quickly, the number of samples in the over-all experiment had to be kept small. It therefore was decided to limit the studies concerning the jacketed storage room to the use of peeled, deveined, individually-frozen pink shrimp--this being the product likely to show the greatest change.

The samples used in this phase of the study were part of the lot of commercial packages of peeled and deveined, individually-frozen pink shrimp described previously in the section on samples stored in a commercial-type cold-storage room. The control sample was also the same as the one described in that phase of the test.

STORAGE OF THE SAMPLES: The packages of frozen shrimp were put in storage at 0° to -5° F. in a jacketed cold-storage room. The design of this type of

room provides high humidity in the storage area, which in this instance was found to be between 90 and 95 percent (Slavin, Peters, and Pottinger 1958).

PALATABILITY TEST: Procedures: After 9 and 12 months of frozen storage in the jacketed room, samples of the peeled and deveined, individually-frozen shrimp were removed from storage, examined for dehydration, and then prepared in the manner described in phase 1 of this study for serving to the taste panel. At the same time, samples of the known control, blind control, and peeled and deveined, individually-frozen shrimp from the commercial-type storage room were served for comparison.

RESULTS: Examination of the samples of shrimp from the jacketed storage room after 9 and 12 months of frozen storage showed no significant dehydration compared with excessive dehydration of similar samples stored at the same temperature in the commercial-type cold-storage room (fig. 3).

The results of taste-panel tests comparing the quality of the shrimp after 9 and 12 months of storage in the commercial-type storage room and after the same length of time in the jacketed storage room are shown in table 2. The scores for the shrimp stored in the jacketed storage room are significantly higher than those for the shrimp stored for the same period of time and at the same temperature in the commercial-type storage room. It is therefore apparent that the packaging materials used were inadequate to prevent dehydration and to maintain high quality for longer than 9 months under ordinary commercial storage conditions. Even with the use of this package, however, high quality was maintained for at least 12 months by storing the shrimp in a high-humidity storage room, where dehydration was at a minimum.

CONCLUSION: Commercial samples of pink shrimp stored at 0° to -5° F. in a high-humidity jacketed storage room were of good quality for at least 3 months longer than were similar samples stored at the same temperature in the commercial-type cold-storage room.

SUMMARY

One approach to the solution of the problem of dehydration in frozen foods is the use of a jacketed freezer which maintains a high relative humidity in the product storage area. In the present study, both a commercial cold-storage room, with a relative humidity of 70 to 80 percent, and a jacketed cold-storage room, with a relative humidity of 90 to 95 percent, were used. The effect of dehydration was determined by measurement of loss of weight and loss of palatability.

In the use of the commercial storage room, the keeping quality at temperatures of 0° to -5° F. of commercial packages of pink shrimp that had been prepared in the following manner was studied: (1) peeled and deveined and (a) frozen individually or (b) frozen in block form and (2) headless raw and (a) frozen individually or (b) frozen in block form. For control, samples hermetically sealed in tin cans and held at -25° F. were used. It was found that with the commercial pack, the loss in weight was 1.8 to 2.5 percent after 9 months and 3.6 to 4.4 percent after 15 months. Owing to dehydration, the shrimp stored for 9 months or longer were of unacceptable quality. No differences in storage life were attributed to the style of pack. The control samples packed in hermetically-sealed containers and held at -25° F., however, were of good quality for 6 months longer than were the commercial samples.

In the use of the jacketed storage room, the keeping quality at temperatures of 0° to -5° F. of commercial packages of the peeled and deveined, individually-frozen pink shrimp were studied. It was found that these shrimp were of good quality for at least 3 months longer than were similar samples stored at the same temperature in the commercial cold-storage room.

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ELECTRICAL FISH DIVERSION SCREEN IN ENGLAND

To reduce the annual kill of sea trout and salmon, an electric screen has been installed about 1 mile above the Low Wood Power Station on the River Leven.

Designed for use in a normal water depth of 2.5 feet and also when tidal influence raised the water level below the turbines to 7 feet, the screen is a steel bridge from which are hung sixty 2-inch steel tubes graded to the river banks and bottom and loaded with 3-phase alternating current at 25 volts per phase at 50 cycles. The current consumption of each phase is about 1.5 amperes at low water, 2.3 amperes at high water; thus the total consumption is from 4.5 to 6.9 amperes.

In tests of the installation, salmon kelts in wood boxes seemed comfortable 5 feet downstream from the screen but were uncomfortable when put within 3 feet of it.

Brown trout (0.75-inch), used in tests to study the effect on migrating smolts, were uncomfortable within 9 inches of the screen. A 15-second stay between electrodes immobilized the fish; they recovered in 15 seconds after removal from the field. Held between electrodes for 1 minute, they did not recover. When freed upstream of the screen to be taken through it by the flow, many were killed, sinking quickly beneath the electrodes.

This first 3-phase alternating-current screen of its type to be set on any river in the country was installed with the cooperation of Mr. Hartley of the Ministry of Agriculture, Fisheries and Food. (L. Steward, Fisheries Officer, Lancashire River Board (The Progressive Fish-Culturist, July 1959), Lancaster, England.)



SURINAM FISHERY EXPLORATIONS, MAY 11-JULY 31, 1957

By James B. Higman*

SUMMARY

Shrimp explorations in Surinam coastal waters, by the Surinam Fisheries Department from April to October 1957, resulted in the location of four species of commercially-desirable shrimp. A Florida-type shrimp trawler was chartered for the work.

Commercial quantities of pink-spotted shrimp ranging from 10 to 25 individuals per pound (heads-off) were caught at rates between 195 and 470 pounds per night, in depths of about 23 to 40 fathoms, using 68- and 89-foot trawls. In 10 to 18 fathoms, brown shrimp and sea bobs were taken in mixed catches. Commercial quantities of those two species of shrimp were scattered and were mixed with considerable quantities of fish. Catches of *Penaeus schmitti*, a shrimp closely related to the white shrimp of the southern United States, were not of commercial quantity.

BACKGROUND

The 1957 Surinam exploratory fishing program was carried out as a direct result of an encouraging preliminary trawling survey made by the Surinam Fisheries Department in 1953 (F&WS 1954a). The 1953 survey demonstrated the presence of shrimp and fish potentials in the offshore waters, and it led the Surinam Government to contract for further exploratory fishing in 1957. A Florida-built shrimp trawler was chartered to carry out trawling operations from April through June 1957. Results were highly satisfactory, and the vessel was re-chartered for a period extending from mid-July through October.

This entire program was planned and supervised by the Surinam Fisheries Department. The primary objective of the portion of the survey extending from April through June 1957 was to determine the species of fish and shellfish present in waters inside the 40-fathom curve and to survey the distribution and availability of these species. Most drags were made with a 10½-foot try net because of the belief that use of this gear could most rapidly give a comprehensive knowledge of the fauna. A secondary objective, during the same period, was to make production-type drags for shrimp and fish with 68- and 89-foot shrimp trawls. The primary objective of the second portion of the survey, from July through October, was to determine the availability of commercial quantities of shrimp and fish. This was attempted by means of production-type fishing.

At the invitation of the Surinam Government an observer from the U. S. Bureau of Commercial Fisheries accompanied the exploratory fishing vessel during all cruises carried out from May 11 to July 31, 1957. This report covers activities observed and results obtained during that period.

AREA INVESTIGATED

Surinam, formerly Dutch Guiana, is situated on the northeast coast of South America (fig. 1). Paramaribo, the capital and base of exploration, is located 18 miles upstream from the mouth of the Surinam River. Four other large rivers empty into the South Atlantic Ocean along the Surinam coast. Of these, the Corentyne on the west and the Maroni on the east, form natural boundaries between Surinam and British and French Guiana. The coastline is flat with unbroken expanses of forest and mangrove swamp; and the lack of bays, lagoons, or other distinct features except river mouths, causes an appearance of uniformity when the Guianas are approached from the sea. This lack of landmarks, and the absence of navigational aids other

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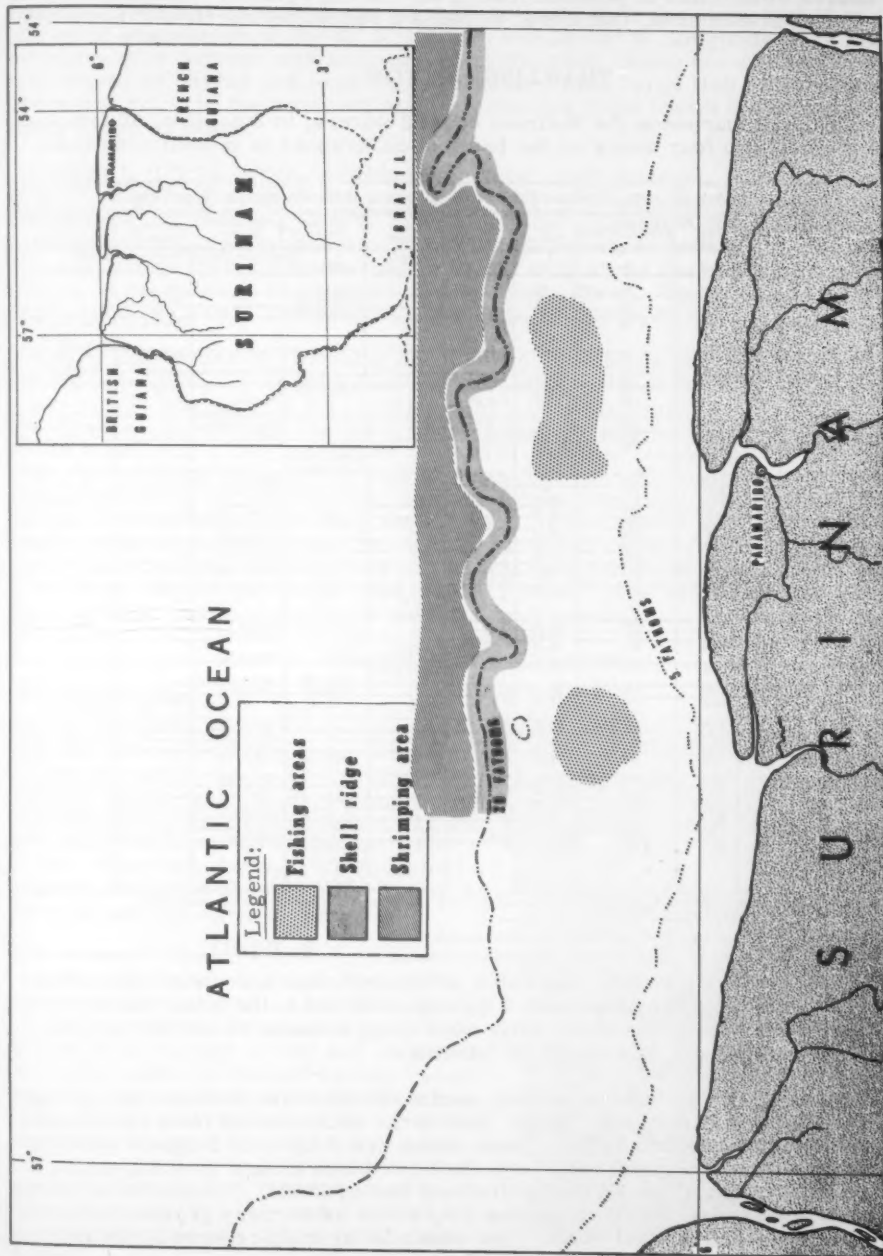


Fig. 1 - General areas of potentially commercial fish and shrimp concentrations found off Surinam.

than the Surinam River light vessel and the radiodirection-finder station at Paramaribo, causes difficulties in position finding for fishing vessels. Equipment essential to operating in this area, therefore, includes a radiodirection-finder and a depth recorder.

TRAWLING BOTTOM

For orientation purposes the Surinam coastal waters, to a depth of 40 fathoms, have been divided into four zones on the basis of differences in bottom conditions

Table 1 - Fishing Log M/V Coquette, Surinam Fisheries Explorations 1957--Production-Type Drags^{1/}

Index No.	Station No.	Starting Position		Date 1957	Fishing Time		Depth Fathoms	Bottom Type	Gear Used	Brown Shrimp 2/		Pink-Spotted Shrimp	Sea Bobs ^{3/}	Miscellaneous Shrimp
		Lat.	Long.		Time	Duration of Drag (Minutes)				(Heads off)	(Quantity in Lbs. and Number Fur)			
1	140	06°24'	54°55'	5/30	0830	90	14	M	68-Foot Flat Trawl	59(40-50)	-	-	-	-
2	145	06°21'	54°58'	"	1058	90	14	M	"	428(30-35)	-	-	108 (L.g.)	-
3	150	06°20'	54°58'	"	1245	120	13-11	M	"	188(30-35)	-	-	256 (L.g.)	-
4	155	06°23'	54°57'	"	1820	90	13	M	"	68(30-35)	-	-	34 (L.g.)	-
5	203	06°23'	54°50'	6/11	1100	90	13-14	M	"	-	-	-	1209 (L.g.)	-
6	308	06°23'	55°03'	"	1350	90	13	M	"	-	-	-	808 (L.g.)	-
7	241	06°20'	54°55'	6/16	0805	90	13-15	M, Sh	"	14(15-20)	-	-	-	-
8	245	06°23'	54°58'	"	1050	95	12-13	M	"	803(30-35)	-	-	-	-
9	260	06°40'	55°20'	6/30	1830	180	23-24	M, S, Sh	"	-	1638 (No count recorded)	-	-	-
10	297	06°43'	55°43'	"	2205	180	34	M, S, Sh	"	-	1152 (12-15)	-	-	-
11	273	06°41'	55°41'	6/21	0120	210	24	M, S, Sh	"	-	256	-	-	-
12	293	06°21'	55°05'	6/28	1010	90	14	M, Sh	"	1609 Whole Mixed Browns & Sea Bobs	-	-	-	39 P. schmitti
13	297	06°43'	55°41'	"	1900	180	34	M, S, Sh	"	-	-	-	-	-
14	311	06°50'	55°51'	7/19	2010	215	24	M, S	"	-	1809 (7)	-	-	-
15	316	06°40'	55°50'	7/20	0910	215	25-26	M, S, Sh, Sp	"	-	1609(15-20)	-	-	-
16	322	06°40'	55°53'	"	0400	210	27-29	M, S, Sh	"	-	1300(15-20)	-	-	-
17	328	06°40'	55°53'	"	1005	210	27-29	M, S, Sh	"	-	656(15-20)	-	-	-
18	337	06°40'	55°51'	7/31	2230	230	29-27	M, S, Sh	"	-	1300(15-20)	-	-	-
19	344	06°40'	55°11'	"	0340	180	27-25	M, S	"	-	1756(15-20)	-	-	-
20	347	06°43'	55°07'	"	1015	235	25-24	M, S	"	-	2500(15-20)	-	-	-
21	354	06°44'	55°04'	"	2525	270	24-25	M, S	"	-	2250(15-20)	-	-	-
22	360	06°19'	55°15'	7/22	0820	150	14	M, Sh	"	-	2250(15-20)	-	-	-
23	361	06°40'	55°21'	7/24	2210	190	24-25	-	80-Ft. Western Jib Trawl	3/	3/	3/	-	-
24	368	06°40'	55°20'	7/25	1905	200	25-24	M, Sh	"	-	1500(15-20)	-	-	-
25	374	06°40'	55°21'	"	2050	225	25-25	M, Sh	"	-	750(15-20)	-	-	-
26	381	06°40'	55°50'	7/28	0500	310	25-26	M, Sh	68-Foot Flat Trawl	-	600(15-20)	-	-	-
27	388	06°37'	55°53'	"	1908	210	26-17	M, Sh	80-Ft. Western Jib Trawl	56(15-20)	100(15-20)	-	-	-
28	392	06°33'	55°54'	"	2305	210	18-17	M, Sh	"	50(15-20)	56(15-20)	-	-	-
29	393	06°19'	55°40'	7/27	0408	180	14-12	M	"	208(26-30)	-	81#Tails	-	42# P. schmitti (12-15)
30	394	06°50'	55°28'	"	2015	210	25-26	M, Sh	"	-	1500(15-20)	-	-	-
31	400	06°50'	55°18'	7/28	2400	210	26-25	M, Sh	"	-	1000(15-20)	-	-	-
32	408	06°50'	55°18'	"	0445	120	18-15	M, Sh	"	-	200(15-20)	-	-	-
33	409	06°50'	55°13'	"	1903	210	26-28	M, Sh	68-Foot Flat Trawl	24(10-15)	2100(15-20)	-	-	-
34	418	06°50'	55°23'	"	2250	240	28-20	M	"	-	1800(15-20)	-	-	-
35	421	06°50'	54°58'	7/29	0310	210	28-27	M	"	-	600(15-20)	-	-	-
36	426	06°50'	54°52'	"	1000	240	28-30	M	"	-	1150(15-20)	-	-	-
37	433	06°51'	54°53'	"	2325	240	30-35	M	"	556(15-20)	556(15-20)	-	-	-
38	439	06°37'	54°53'	7/30	0245	180	4/10-40	M	"	576(15-20)	576(15-20)	-	-	-
39	444	07°03'	54°23'	"	1855	240	4/37-30	M, S	"	100(15-20)	100(15-20)	-	-	-
40	453	06°20'	55°07'	7/31	0630	180	13-8	M	Mixed Brown & Sea Bobs 85# whole Shrimp	-	-	-	-	-

^{1/} Trawling stations were numbered in sequence, from Station 1 through Station 453. Try-net drags are not included in the table, causing a break in the continuity. To preserve the original station designation and still provide continuity, arbitrary index numbers, starting with number one, have been provided.

^{2/} Numbers followed by a # sign indicate pounds of shrimp. Numbers in parentheses refer to the heads-off count per pound.

^{3/} Trawl lost on unidentified obstruction--no catch.

^{4/} The depth-measuring used during the survey presented a maximum range of 220 feet (approximately 36.6 fathoms). Depths in excess of this are, therefore, estimated.

^{5/} Trawl badly damaged by sawfish--part of catch lost.

and faunal groupings. These four somewhat arbitrary zones and their approximate depth limits are: the inshore zone from 0 through 4 fathoms, the intermediate zone from 5 through 18 fathoms, the shell-ridge zone lying between 19 and 23 fathoms, and the offshore zone from 23 through 40 fathoms.

INSHORE ZONE: The inshore waters, shallower than five fathoms, are irregularly obstructed by extensive soft "sling" mud banks which extend from 2 to 12 miles offshore (Hydrographic Office 1935). These banks are subject to frequent shifting by tides and strong westerly currents, and their presence makes trawling inside 5 fathoms extremely hazardous (Whiteleather and Brown 1945). The shallows and the marshy areas adjacent to the river mouths may serve as nursery grounds for some species of shrimp found off that coast. The water in the inshore zone is the color of creamed coffee due to considerable material in suspension.

INTERMEDIATE ZONE: Beyond five fathoms, trawlable bottom, largely consisting of soft, sticky, gray mud, extends out to approximately 18 or 19 fathoms where it gives way to rougher, dead shell bottom. With the exception of one try net, lost on an obstruction at 06° 22' N. latitude and 55° 06' W. longitude in 14 fathoms, no extensive gear damage was encountered in the zone. Some net damage, however, was caused by sharks and sawfish; particularly when large fish catches were made. The water color in the intermediate zone changes from brown on the inshore side to milky green offshore.

SHELL RIDGE ZONE: Within the general depth interval, 19 to 23 fathoms, a zone of rough bottom apparently parallels most of the Surinam Coast. This is unsuitable shrimp trawling bottom; responsible for some torn gear but no net losses. Although the ridge is narrow along the eastern and central Surinam coast, exploratory operations indicate a widening in the vicinity of the Coppename River and disruption of the ridge in the vicinity of the Maroni River. Try-net catches included dead encrusted shells, dead coral, gorgonids, and sponge.

OFFSHORE ZONE: In water deeper than 23 fathoms hard trawlable bottom, consisting predominately of gray mud and fine shell, extends to at least the 40-fathom depth curve--the limit of the trawling gear. Scattered through this zone are extensive patches of soft blue and black mud. Large expanses of the gray mud bottom are covered with a fine moss-like gorgonids growth which clogged the trawl meshes. This caused some difficulty in trawling, because the additional drag reduced the fishing ability of the net. Sun-drying the net, followed by vigorous brushing, was the only effective method of removing the material. Five-hour drags in one direction were made in the zone without gear damage, but it is not entirely free from snags. At approximately 06° 50' north latitude and 55° 26' west longitude a hang-up on an unidentified object stopped the winch while "hauling back." The water color in this zone is the deep blue that is characteristic of the open ocean.

VESSEL AND PERSONNEL

A typical Florida-type shrimp trawler, the *Coquette*, was used in this survey (fig. 2). Its registered dimensions are: length, 61.4 feet; beam, 18.4 feet; draft, 8.5 feet; gross tonnage, 64.82; and net tonnage, 31.0 tons. The vessel is Diesel-driven and delivers 120 shaft hp. at 1,000 r.p.m. The crew, during the exploratory survey, consisted of two United States citizens and one Surinam national.

GEAR

The 10½-foot try net used during this survey was constructed of 2-inch mesh^{1/}, 15-thread-tarred-cotton webbing with the exception of the bag or cod end which was of 1-inch mesh, 21-thread-tarred-cotton webbing. The headrope and footrope were tied directly to 2- by 1-foot try-net doors which were rigged from a 15-foot chain bridle, secured by shackles and a swivel, to the try-net cable. Try-net drags were also made with 8-, 13½- and 17½-foot try nets constructed and rigged in similar fashion.



Fig. 2 - Florida-type shrimp trawler *Coquette* used in 1957 Surinam explorations.

A 400-mesh flat trawl, with a headrope measuring 68-feet 7-inches long

^{1/} All mesh sizes refer to stretched-mesh measure.

and a footrope measuring 78 feet 7 inches long, was used for most production-type drags (fig. 3). The body was made of 2-inch mesh, 15-thread-tarred-cotton webbing;



Fig. 3 - Retrieving the cod-end of the 68-foot shrimp trawl aboard the *Coquette*.

and the bag was of $1\frac{3}{4}$ -inch mesh 42-thread-tarred-cotton webbing. The bag was protected by chafing gear. Six-foot extensions of the headrope and footrope were used in attaching the trawl to the 10-foot by 42-inch trawl doors. A tickler chain measuring 6 feet shorter than the headline was used when fishing this net.

A few offshore drags were made with a 450-mesh western jib trawl which measured $89\frac{1}{2}$ feet on the headrope. The body was made of $2\frac{1}{4}$ -inch mesh, 18-thread-tarred-cotton webbing and the bag was of $1\frac{3}{4}$ -inch 42-thread-cotton webbing. This net was fished with 7-foot extensions and a $101\frac{1}{2}$ -foot tickler chain.

FISHING RESULTS

INSHORE ZONE, 0 THROUGH 4 FATHOMS:

Trawling in depths shallower than five fathoms was risky because of the danger of bogging the trawl doors and the net in the extremely soft mud bottom. Eight 15-minute try-net drags were attempted in the zone in a restricted area east of the mouth of the Surinam River. Shrimp catches consisted entirely of small numbers of sea bobs ranging from

100 to over 300 individuals per pound (heads on). The total weight of individual try-net catches ranged from 2 to 20 pounds. Sea catfish, small sea trout, and croakers comprised the bulk of the weight of the catches. No production-type fishing was attempted in this zone.

INTERMEDIATE ZONE, 5 THROUGH 18 FATHOMS: Shrimp catches: Daytime try-net coverage in the intermediate zone from the mouth of the Surinam River west to the Coppename River and east to the Maroni River was extensive. The portion of the zone lying west of the Coppename was not investigated during the 1957 survey. Results of the try-net work indicated a discontinuous distribution of brown shrimp. Even with this interrupted distribution pattern, catches of commercially-valuable quantities of brown shrimp were made in two instances with the 68-foot trawl. At station number 145, in 14 fathoms, 42 pounds of brown shrimp (heads off) resulted from a drag of approximately $1\frac{1}{2}$ hours, and at station 245, 90 pounds of brown shrimp (heads off) were obtained in 65 minutes. The shrimp ranged in size from 26 to 35 tails per pound.

Sea bobs were obtained from try-net drags at depths shallower than 16 fathoms. Peak abundance occurred between 10 and 15 fathoms. Although large sea bobs were occasionally met within a moderate quantity, most catches of this species were small and consisted of individuals ranging in size from 100 to 500 shrimp per pound (heads on). Commercial quantities of sea bobs resulted from two drags with the 68-foot trawl. These two 13-fathom drags (Stations 203 and 208) each lasting approximately $1\frac{1}{2}$ hours, caught 120 and 80 pounds of heads-off sea bobs, respectively, ranging in size from 60 to 65 shrimp (heads off) per pound.

Try-net drags were also made off the coast of French Guiana and promising indications of brown shrimp were found in depths of 16 to 18 fathoms. Strong currents



Fig. 4 - Large catch of fish made northeast of the Surinam River by the Coquette.

P. schmitti, its near-relative, may behave similarly, and thus be available in larger quantities along the Surinam coast at other times of the year.

were encountered in the area and, in some instances, they caused fouling of the try-net gear. Time was not available for production work with the 68- and 89-foot trawls.

Blue-colored shrimp, resembling the white shrimp (*Penaeus setiferus*) of the Atlantic and Gulf coasts of the United States, were taken at 4 stations off the Surinam and Coppename Rivers. In all instances the catch of that species (*Penaeus schmitti*) was less than 5 pounds. *Penaeus setiferus* is known to appear in a definite seasonal pattern and to migrate in concentrated schools. It is possible that

Table 2 - Scientific and Common Names of Fish and Shrimp			
Fish		Shrimp	
Scientific Name	Common Name	Scientific Name	Common Name
<i>Micropogon</i> sp.	Croaker	<i>Penaeus brasiliensis</i>	Pink-spotted Brown
<i>Lonchurus</i> sp.	"	Latreille	
<i>Paralichthys</i> sp.	"	<i>Penaeus aztecus</i> Ives	
Family Ariidae	Sea Cat Fishes	<i>Penaeus schmitti</i>	
<i>Nebris</i> sp.	Surinam Butterfish	Burkenroad	-
<i>Cynoscion</i> sp.	Sea Trout	<i>Xiphopenaeus kroyeri</i>	Sea-bob
<i>Macrodon</i> sp.	"	(Heller)	

Fish Catches: Trawling efforts with the 68-foot shrimp trawl, conducted north and northeast of the mouth of the Surinam River at depths of 12 to 14 fathoms, showed that substantial quantities of commercially-desirable species of fish could be taken consistently (fig. 4). Except for one instance, all drags in this area and depth range, made with the 68-foot shrimp trawl, caught from 330 to 840 pounds of commercially-desirable fish an hour; mainly sea trout, sea catfish, Surinam-butterfish, and croaker-like species (table 1). These catches also contained considerable quantities of fish which are not utilized commercially at present (fig. 5).

Although the catches were made in only one area, it has been reported that trawlers from other countries have been making good catches of commercial species of fish off the Coppename River. In addition, try-net catches of sea trout, croakers, and sea catfish indicate wide distribution of the fish throughout the intermediate zone. This portion of the work added considerably to the knowledge of the abundance and distribution of fish stocks initially gained during preliminary explorations by the Surinam Fisheries Department (F&WS 1954a).

SHELL RIDGE ZONE, 20 THROUGH 22 FATHOMS: As previously stated, no catches of commercial value resulted from trawl sets made on the shell ridge.

OFFSHORE ZONE, 23 THROUGH 40 FATHOMS: Excellent catches of especially large pink-spotted shrimp (10 to 25 shrimp per pounds, heads-off) were made in extensive areas within the offshore zone by means of the 68- and 89-foot shrimp trawls. Most extensive coverage was obtained in the offshore area between the mouth of the Surinam River and the mouth of the Coppename River. During June, one full night of trawling (9½ hours) resulted in a total 366 pounds (heads-off) of pink-spotted shrimp averaging 10 to 15 shrimp per pound (heads-off); and a partial night of trawling (3 hours) yielded 180 pounds (heads off) of the same species. Based mainly on these successful June fishing efforts, an attempt was made to determine the maximum possible production from the same area in July. A total of 1,310 pounds of pink spotted shrimp (heads-off) averaging 15 to 25 per pound (heads-off) was taken in three successive nights of fishing. The average hourly catch rate for this period was 44 pounds. Two additional nights of trawling, which almost completely traversed the geographic limits mentioned above, yielded a total of 585 pounds (heads-off) of pink-spotted shrimp.

Trawling efforts in the offshore zone between the mouth of the Surinam River and the mouth of the Marone River were not extensive enough to provide adequate information regarding the shrimp production potential. Excellent results, however, were obtained during one night of trawling. Trawling operations, in this instance, commenced off the mouth of the Surinam River and extended eastward. A total of 470 pounds of pink-spotted shrimp (heads off) was taken in 11 hours of fishing. During an additional night of trawling, farther east, a four-hour drag made in 30 to 35 fathoms caught 110 pounds of heads-off shrimp consisting of equal quantities of pink-spotted shrimp and brown shrimp. Both species averaged 15 to 25 shrimp per pound (heads-off). Considerable damage to the cod end of the net was caused by sawfish during one drag in this area; and the shrimp catch, therefore, was poor. These trawling results indicate that commercial quantities of marketable shrimp are widespread in the offshore zone.



Fig. 5 - A 65-minute trawling catch estimated at 5,000 pounds. Commercially-valuable components included 150 pounds of brown shrimp and 910 pounds of fish.

WEATHER CONDITIONS

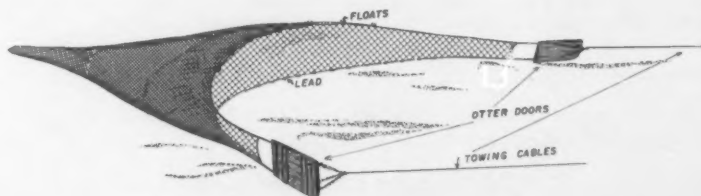
The Surinam trawling grounds lying beyond the 20-fathom contour are exposed to prevailing easterly winds for most of the year. Particularly during the winter season, winds of moderate to fresh velocity can be expected along with correspondingly increased sea conditions. There are no offshore reefs, islands, or shallow banks to provide a lee shore, and suitable inshore anchoring grounds are often ten hours away on a round-trip basis. There are, thus, problems associated with commercial-fishing operations that are somewhat different from those of the Gulf of Mexico and the South Atlantic coast of the United States.

During the winter months of January through March, the trade winds blow regularly and persistently from the northeast. However, the regularity of these trade winds provides a partial solution insofar as fishing efforts are concerned. Seas generated under these conditions may occasionally cause some crew discomfort, but trawling operations are feasible especially if trawling is carried out into the wind; i.e. in a northeasterly direction. Although the winter season is the period of heaviest weather, there is some compensation for this. Sudden damaging squalls (of the type encountered in Southeastern United States) are notably absent, at that time, on the Guianan Coast. In addition, the Guianas are singularly free from hurricanes which disrupt shrimping in other areas.

General consideration of the weather conditions of the area indicates that trawling can be carried out over an appreciable portion of the January to March period. With minor exceptions, such as summer tropical rain squalls, the remainder of the year is favorable for fishing. Because of the distance from the coast of the best shrimp grounds, and the absence of shelter, particular attention should be given to providing adequate ground tackle.

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PRINTERS' INK FROM FISH

Pakistani fish technologists have produced printers' ink of good quality by mixing Puntis fish oil with linseed oil. Puntis, Barbus stigma, (Puntius) is a fish which is abundantly available at a low price. Shark-liver oil is also used in the manufacture of black printers' ink. (Australian Fisheries Newsletter, February 1959.)



DEVELOPMENT OF STANDARDS FOR PACIFIC COAST FISHERY PRODUCTS

The development of voluntary standards for grades of fishery products was started about five years ago by the U. S. Department of the Interior's Fish and Wildlife Service. The first standard was published under an agreement with the U. S. Department of Agriculture in 1956. Standards for grades of fishery products were promulgated under this arrangement. Inspection and certification services for fishery products became the responsibility of the U. S. Department of the Interior on July 1, 1958. Since then the program has developed at an accelerating rate. Five standards have already been developed and put into effect by the Bureau of Commercial Fisheries: frozen fried fish sticks, frozen raw breaded shrimp, frozen fish blocks, frozen haddock fillets, and frozen halibut steaks. It is likely that by the end of 1959 this number may be doubled to include frozen raw breaded fish portions, frozen cod fillets, frozen ocean perch fillets, and frozen salmon steaks.

Some 28 firms are now under continuous inspection. On the Pacific coast one processor has accepted continuous inspection in the Los Angeles area and an inspector has been hired to service a Seattle processor as well as other processors in the Pacific Northwest that are interested in lot inspection.

The U. S. Department of the Interior's voluntary standards program consist of two major stages:

(a) Standards development and promulgation. (The development of the standard is carried on by the several technological laboratories, and when a given standard is judged to be reasonably satisfactory by industry and laboratory personnel, it is turned over to the Bureau's Washington office for review and re-working prior to official promulgation.)

(b) Product inspection and certification. (The inspection and certification is carried on by trained government inspectors.)

NEED AND OBJECTIVES: The need for, and the advantages of, voluntary U. S. standards for grades have been recognized by various segments of the fishery industry, and they have requested the Bureau of Commercial Fisheries to develop such standards.

The primary objective of this project is to develop and to assist in the promulgation of voluntary U. S. standards for grades which are to serve as a quality grading yardstick for buying and selling of fishery products; we thereby seek to create a quality-improving incentive, which has for its ultimate purpose a greater consumer acceptance and consumption of fishery products. A parallel objective is to train and work with the product inspection and certification groups (field inspectors) in developing practical means of evaluating, protecting, and improving the quality of fishery products. Active industry support and participation to these ends is essential.

The current work of the Bureau's Seattle Technological Laboratory on standards is concerned with:

- (a) Completing the standard for frozen salmon steaks.
- (b) Developing a standard for frozen dressed halibut.
- (c) Training and orientation of the newly-employed Government inspector at Seattle in the grading of frozen halibut steaks and all other fishery products that he may be called upon to inspect. (Inspection of fishery products may be on the basis of the published voluntary standards, Federal specifications, or such other applicable material, such as industry specifications).

As an example of some of the details involved in the development of a standard, the following sequence is given for the halibut steak standard which became official on March 15, 1959:

- (1) The responsibility for developing the Frozen Halibut Steak Standards was assigned to the Seattle Technological Laboratory.
- (2) The Standards Unit made numerous plant visits and discussed with various halibut steak processors the quality-affecting characteristics that should be considered.
- (3) Numerous samples from retail and wholesale origin were examined to see what other quality factors might be considered. In addition, some samples were allowed to spoil under accelerated storage conditions (simulating poor storage) to observe the development of the various deteriorative type of quality defects.
- (4) Quality factors that affect the desirability and eating quality of halibut steaks from the standpoint of the household consumer and fish buyers were investigated and considered.
- (5) When sufficient data were accumulated, a rough draft standard was drawn up and reviewed by our laboratory personnel from which was prepared a first proposed draft for industry consideration.
- (6) A public meeting was held with the various local segments of the halibut industry to discuss this first proposed draft. Industry comments and suggestions were embodied in a revised draft.
- (7) This revised draft was reviewed with the industry's appointed Halibut Steak Technical Committee in order to assure that the standards were practical and reflected quality levels that are reasonably attainable by industry. Based upon industry suggestions and further cross-consultation, the standards may be revised several times at this phase of the development, which was the case for the halibut steak standards. In addition, during this phase of development, the standards were reviewed by our other Bureau laboratories.
- (8) To test the practicality of the standards, a grading survey was made of some 300 randomly-selected retail and institutional size packages of frozen halibut steaks.
- (9) When the standards were considered close to what industry and the Technological Laboratory personnel considered reasonable, the latest revised draft was circulated, on a national basis, to the various segments of industry for comment. At this time industry was advised that a series of public hearings would be held in various major cities to further review the proposed standards.

(10) On the basis of the comments and views expressed at these meetings, a final draft was prepared and submitted to the Washington office for approval. After minor modification it was submitted as a notice of proposed rule making, published in the Federal Register on December 3, 1958. Notice was therein given of the intention of the Director of the Bureau of Commercial Fisheries to recommend to the Secretary of the Interior, the adoption of the United States Standards for Grades of Frozen Halibut Steaks as set forth. Interested persons were given until January 1, 1959, to submit views or comments concerning the standard. No comments were received.

(11) Accordingly, the standards as set forth were adopted, and published in the Federal Register of February 25, 1959. They became effective on March 15, 1959. (Federal agencies may now, if they wish, purchase frozen halibut steaks on the basis of the grades set forth in these standards.)

Although the standards are designed to reflect high product quality, they should, at the same time, be practical, keeping inspection costs to a minimum. For example, one of the quality factors considered in our preliminary drafts was free drip, the liquor that exudes from the fish meat on thawing. Based on laboratory tests, it was found that the time and cost-consuming procedure of making drip determinations was unessential and not too meaningful for halibut steaks. The deletion of drip simplified the halibut standards from the standpoint of equipment, time, and cost.



COD-LIVER OIL IS POTENT CHOLESTEROL LOWERER

In contrast to animal fats which increase the serum cholesterol level in the body, oil from marine animals--seals, sardines, whales--seems to lower the level.

Since cholesterol is believed to be associated with atherosclerosis, research reported on the potent cholesterol level reducing activity of cod-liver oil may be important in human medicine. It is more potent than some vegetable fats tested.

Rats fed a diet of starch to which cholesterol and coconut oil were added received both corn oil and cod-liver oil as dietary fats. The fish oil, report A. P. de Groot of the Central Institute for Nutrition and Food Research, Utrecht, and S. A. Reed of the Marfleet Refining Co., Ltd., Hull, had a higher cholesterol-lowering activity.

The fatty acid fraction accounts for most if not all of the activity, the scientists report in Nature (April 25, 1959).

TRENDS AND DEVELOPMENTS

Alaska

BIOLOGISTS PRODUCE LARGE RUN OF YOUNG RED SALMON IN RESEARCH LAKE:

A very high survival of red or sockeye salmon fry planted in a study lake was achieved by Alaska Department of Fish and Game biologists at the Kitoi Bay Research Station on Afognak Island, the Commissioner of Fish and Game stated on July 6, 1959.

The Commissioner cited two reasons for this successful lake stocking. First, the lake had previously been cleared of

Sockeye (red) Salmon
(*Oncorhynchus nerka*)



scrap fish, eliminating both predation and competition; secondly, a falls at the lake outlet had barred re-entry of scrap-fish into the lake.

Whereas the usual fingerling survival in runs from natural lakes to the ocean is only about one percent, the spring migration count recorded survival at the Kitoi project of over 35 percent. Over 41,000 fingerling were counted from the 35-acre lake to the ocean.

While it is gratifying to obtain these excellent results and to establish a new run of salmon in a small lake that was previously barren, the knowledge gained will be of great importance in re-establishing some of the runs that have been depleted in large Alaskan lakes, the Commissioner said.

KING SALMON SPORT FISHERIES IN SOUTHEASTERN ALASKA TO BE STUDIED: A new research study on king salmon stocks of the Southeast Alaskan

sport fisheries has been started, the Alaska Commissioner of Fish and Game stated on July 15, 1959.

This highly prized salt-water sport fish has shown signs of decline in various areas of the Pacific Coast and as a result a coastwise study has been called for, under the sponsorship of the Pacific Marine Fisheries Commission, which is an organization of representatives from state fisheries agencies.

In cooperation with the Commission's proposal, the Alaska Fish and Game Department is seeking to determine how many king salmon are being taken in the recreational fisheries and the location of the home streams of the various races.

It is known that king salmon taken in Alaskan waters come from rivers far to the south as well as from local streams, the Commissioner stated. It is necessary to have information on how many fish from each race are being harvested, in order to do an effective job of regulation.

It is expected that the new study will be financed in part from Federal Aid Dingell-Johnson funds.

RECORD NUMBER OF TAKU RIVER KING SALMON CAPTURED BY FISH WHEEL:

Approximately 1,700 king salmon had been captured by June 16, 1959, by means of a fish wheel and 1,600 tagged by the Alaska Department of Fish and Game biologists at the Department's Canyon Island Research Station on the Taku River. This is almost three times as many as ever taken in a previous season.

In the nine years that the fish wheel has been in operation by the Department, 600 king salmon is the largest number ever taken in one season. This indication of a good escapement, plus general-

ly good fishing by the gillnetters on Taku Inlet, is an encouraging step in the maintenance of an adequate run of kings in the Taku River system.

Alaska research biologists are undertaking the tagging operation on the king salmon at the station, supplemented by a spawning ground survey on the upper Taku tributaries. This work will help determine several phases of the life history of the king salmon. An estimate of total escapement will be made. Scale samples, along with body measurements and sex ratios taken from the gill-net fishery, the fish wheel, and the spawning grounds will enable the biologists to ascertain the age and size composition of the run. (Alaska Department of Fish and Game news release, June 16.)



California

AERIAL CENSUS OF COMMERCIAL AND SPORT FISHING CONTINUED: Airplane Spotting Flight 59-9-Crab: Coastal waters from Monterey to the California-Oregon border were surveyed from the air (May 15-16, 1959) by the Department's Cessna 180 to determine the fishing localities and relative fishing intensity of the central and northern California crab fleet. Excellent visibility and flying conditions prevailed and all crab fishing areas within the survey area were adequately scouted.

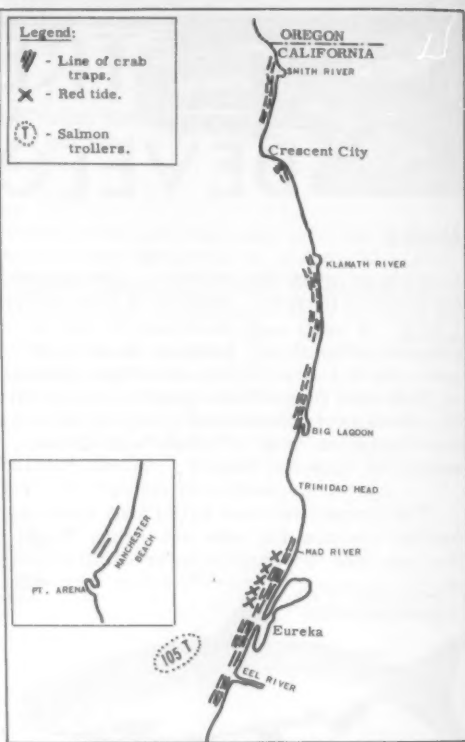
A total of 74 lines of crab gear were counted in the area bounded by False Cape and the Oregon border. This was a notable increase over the March and April counts for the same area. This increase is attributed to improved visibility and the use by fishermen of fewer units of gear per trap line to facilitate fishing operations in shallow depths. Concentrations of gear were found in the area between the Klamath River and Big Lagoon, as well as between the Mad and Eel Rivers.

Two lines of crab gear were noted between False Cape and Pt. Arena. These were set in moderate depths off Manchester Beach.

A total of 26 lines of crab gear was observed in the area between the Russian River and Half Moon Bay. The majority was set in moderate depths between San Francisco and Pt. San Pedro.

One line of gear was sighted off Moss Landing in Monterey Bay.

Pelagic fish schools varying in size from small to large were observed between San Francisco and Pt. San Pedro and in Monterey Bay. They were identified as anchovies. A partial census in Monterey Bay revealed 91 schools in the area between the Pajaro River and Monterey and 2 to 3 miles offshore.



Airplane Spotting Flight 59-9 (May 15-16, 1959).

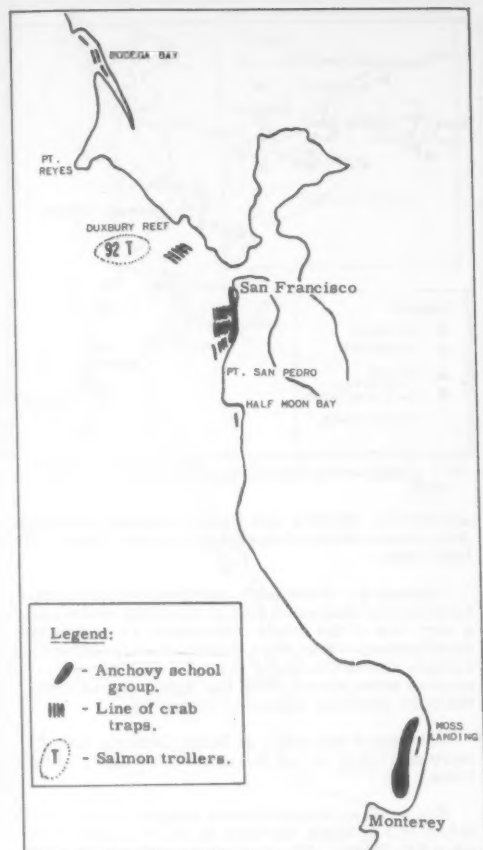
Red-tide conditions were present in the limited area from Eureka north to the Mad River.

Salmon trollers were concentrated 5 to 10 miles off the Eel River on the north coast and off Duxbury Reef in central California. Respective counts were 105 and 92 for the two areas.

Airplane Spotting Flight 59-10-Abalone: The shore line from Ano Nuevo to Ft. Bragg was surveyed (May 24, 1959) by the Department's Cessna 180 to estimate the number of abalone fishermen during a very low minus tide falling on a weekend.

Favorable conditions prevailed both for observation and for the abalone fishermen. Because of optimum conditions more people were observed on the beaches than on any previous aerial count. In most areas crowds were too dense for individuals to be counted. Only estimates could be made and at some locations only the automobiles could be counted with any degree of accuracy.

It is difficult from the air to determine exactly what animals are being taken by people in and among the rocks. In some locations, such as Bolinas Lagoon, it was obvious that the people were digging for clams; in others, they were fishing from rocks but the majority of fishermen appeared to be searching for abalone.



Airplane Spotting Flight 59-9 (May 15-16, 1959).

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BARRACUDA AND WHITE SEA BASS SURVEY OFF BAJA CALIFORNIA AND SOUTHERN CALIFORNIA CONTINUED (M/V N. B. Scofield Cruise 59S3-Barracuda-White Sea Bass): The coastal waters off Baja California and southern California from Pta. Canoas north to Santa Catalina Island were surveyed (May 6-24, 1959) by the California Department of Fish and Game research vessel N. B. Scofield to tag and release barracuda and white sea bass, and to make incidental fish collections.

In all, 2,450 barracuda ranging in length from 450 to 1,003 mm. were tagged with spaghetti loop tags and released--2,300 in Mexican waters and 150 off southern California. No white sea bass were caught.

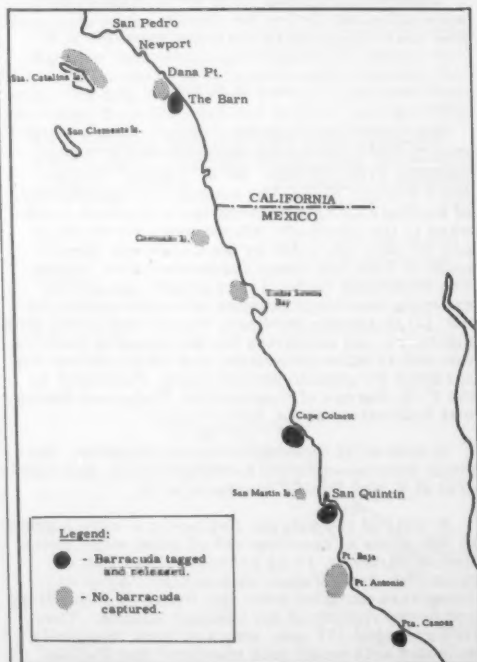
Barracuda were captured, tagged, and released on 12 of 17 fishing days in five areas. The largest catches were made where surface water tempera-

tures ranged between 15° C. (59° F.). Thirteen fish were released at Pta. Canoas, 591 in the vicinity of Hondo Canyon, 375 off Camalu Point, 1,282 in Colnett Bay, and 150 off "The Barn" between Ocean-side and San Clemente.

Fishing at the Coronados Islands, San Carlos Bay, Geronimo Island, Point Baja, Todos Santos Bay, San Martin Island, San Catalina Island, San Mateo Point, and Dana Point failed to produce barracuda.

Schools of barracuda were located by trolling four lines through areas where the fish were most likely to be. The lines, attached to outriggers, were set to fish at various depths with several types of bone and metal lures.

After locating barracuda, they were captured either by still-fishing or pole-trolling--using 18-foot bamboo jack-poles. For still-fishing, a small feather lure was attached to a wire leader and moved back and forth at the surface along the side of the boat. When pole-trolling, the same pole was used but a metal or bone lure was employed in place of the feather. The pole was held by hand from the stern of the vessel which moved at a speed of two to four knots. The means of capture depended upon the behavior of the fish. When a great number of barracuda could be lured to the boat by chumming with live bait, they were still-fished. When the fish were scattered, a condition apparently associated with the presence of large



M/V N. B. Scofield Cruise 59S3-Barracuda-White Sea Bass (May 6-24, 1959).

amounts of natural food in the water, the pole-trolling method was used.

As the fish were captured, they were placed in the vessel's live bait wells and held until fishing slowed down or stopped completely or until the wells were filled to capacity. The largest of the three bait wells has a capacity of 3,000 gallons and held almost 300 barracuda. The two smaller wells, each with a capacity of about 2,500 gallons, held between 200 and 250 barracuda. Mortality in the tanks was between 1 and 1.5 percent. During the early part of the cruise, only the 3,000-gallon tank was available, but as the live bait was used up, the two smaller wells were freed for use as holding tanks.

The advantages of holding the fish rather than tagging them as they were caught were: (1) no fishing time was lost while waiting for the fish to be tagged; (2) the fish could be handled more carefully at all stages; (3) weak fish died in the tanks; and (4) the chance that the tagged fish would pull the rest of the school away from the boat was eliminated. Tagging was usually done in a different location from where the fish were caught—either on the way to the night anchorage or at the anchorage.

Two teams were used during the tagging operations, including two taggers, two fish holders, one recorder, and one man for brailing the fish from the tanks. The time required to tag each fish was approximately 20 seconds.

Besides barracuda, 11 other species of fish were collected during the cruise.

Note: Also see *Commercial Fisheries Review*, March 1959, p. 29.

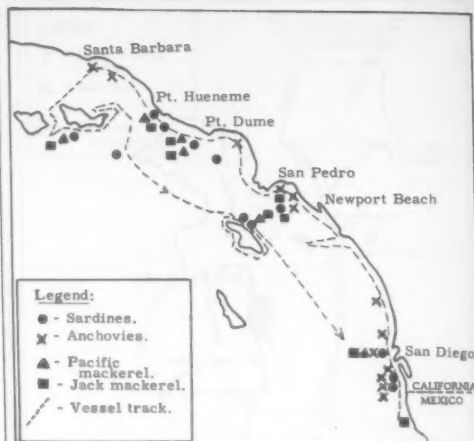
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PELAGIC FISH POPULATION SURVEY OFF COAST OF SOUTHERN AND CENTRAL CALIFORNIA CONTINUED: M/V "Alaska" Cruise

59A4-Pelagic Fish: The coastal and island waters off southern California from Santa Barbara southward to the Coronado Islands were surveyed (April 28-May 18, 1959) by the California Department of Fish and Game research vessel *Alaska*. The objectives were: (1) to sample the spring spawning sardine population off southern California; (2) to sample sardines, Pacific mackerel, jack mackerel, and anchovies for determining distribution and relative abundance; and (3) to collect live sardines for genetic studies being conducted by the U. S. Bureau of Commercial Fisheries Biological Laboratory at La Jolla.

A total of 88 light stations were occupied. Sardines were taken at 12, anchovies at 13, jack mackerel at 9, and Pacific mackerel at 6.

A total of 120 pelagic fish schools were sighted in 386 miles of scouting--33 of these were identified as sardines, 13 as anchovy, 46 as Pacific mackerel, and 28 were unidentified. Adult sardines were sampled from San Pedro to Point Mugu and in the vicinity of the Channel Islands. These fish averaged 197 mm. long and were frequently schooled with small jack mackerel and Pacific mackerel. Small sardines were sampled from the Mexican border northward to La Jolla. These fish ranging from 130 to 160 mm., were schooled with



M/V *Alaska* Cruise 59A4-Pelagic Fish (April 28-May 18, 1959).

anchovies. Sardine and Pacific mackerel schools were observed most frequently in the Channel Island area.

Almost all of the adult sardines sampled were in advanced stages of sexual maturity while only a very few of the small individuals showed sexual development. The adult sardines were difficult to sample due to the great depth at which they remained when attracted to the light. Lures were the only effective means of sampling.

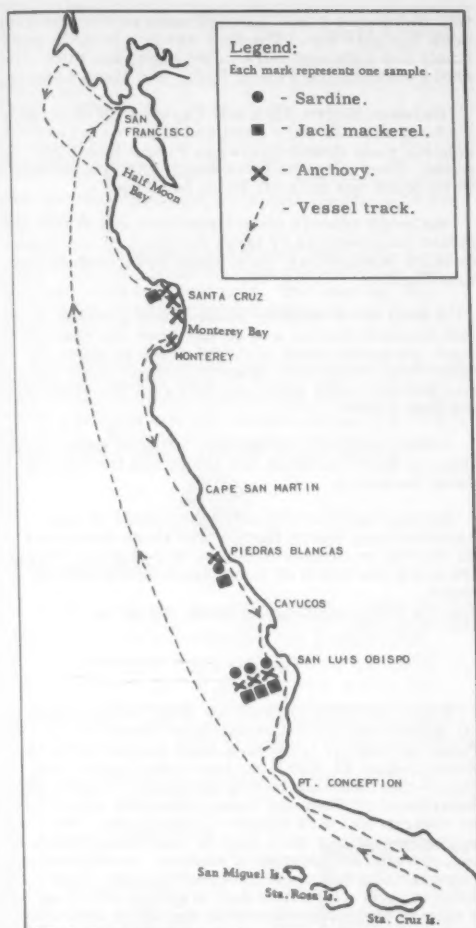
Live sardines taken at Santa Catalina Island were delivered to the Bureau's laboratory at La Jolla.

Sea surface temperatures ranged from 11.6°C. (52.9° F.) at Santa Barbara to 19.2°C. (66.6° F.) near San Pedro. The low temperature was taken following three days of gale-force winds. Red crabs (*Pleuroncodes planipes*) were present at light stations as far north as the northern Channel Islands.

M/V "Alaska" Cruise 59A5-Pelagic Fish: The coastal waters off central California, from Pt. Reyes southward to Pt. Conception, were surveyed (May 28-June 15, 1959) by the Department's research vessel *Alaska* to sample the sardine spawning population off central California; to sample sardines, Pacific mackerel, jack mackerel, and anchovies for determining their distribution and relative abundance; and to collect live sardines for genetic studies being conducted by the U. S. Bureau of Commercial Fisheries at La Jolla.

A total of 46 night light stations was occupied. Ten of the stations (22 percent) yielded one or more of the four pelagic species (sardines, Pacific mackerel, jack mackerel and anchovies). Anchovies were sampled at 9 stations (20 percent), jack mackerel at 5 (11 percent), and sardines at 4 (9 percent).

Three of the four sardine samples originated in San Luis Obispo Bay and one in San Simeon Bay.



M/V Alaska Cruise 59A5 (May 28-June 15, 1959).

The sardines ranged in standard length from 168-216 mm., with an average length of 204 mm. Almost all of the female sardines examined were in early stages of egg development but none was in a spawning condition.

A total of 252 miles was scouted at night and 308 fish schools were observed. Of these, 282 were identified as anchovies, 5 as sardines, and the remainder (21) were unidentified. Fish schools were concentrated in two general areas--in Monterey Bay and off Pt. Buchon. Off Pt. Buchon they were so numerous that 61 schools of anchovies and 2 of sardines were counted between 0400 and 0430 on May 30. A dark night and bright bioluminescence made visual scouting conditions excellent at that time.

Live anchovies and jack mackerel obtained in Long Beach Harbor were delivered to the Stein-

hart Aquarium at San Francisco for use in experimental studies.

Airplane Spotting Flight 59-8-Pelagic Fish: The inshore area of California between La Jolla and Ano Nuevo Point was surveyed from the air (May 11-13, 1959) by the Department's Cessna 170 (1359 D) to assess the distribution and abundance of pelagic fish schools.

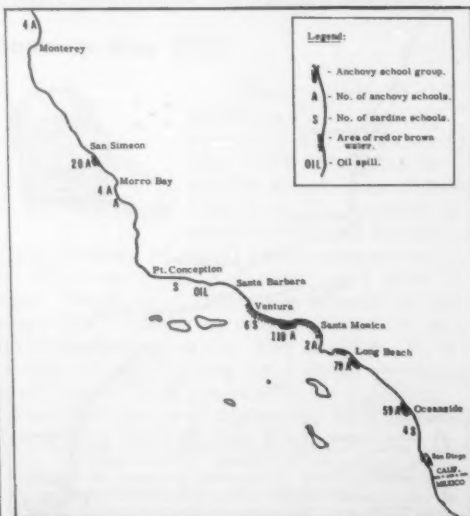
Weather conditions north of Santa Monica Bay were unfavorable for the third consecutive month, but south of Santa Monica Bay conditions were good.

Pelagic fish were again scarce north of Point Conception and only 29 anchovy schools were observed. Four small schools were present one mile off Moss Landing, 20 large dense schools one to two miles off Cambria Pines, four small schools just north of Point Buchon near the surf line, and one small school at Pecho Rock near Avila.

A total of 11 sardine schools and 250 anchovy schools were counted south of Point Conception. One sardine school was present two miles south of Gaviota, six were one to two miles offshore at Point Mugu, and the remaining four were about three miles west of Encinitas.

A large concentration of "breeding" anchovies was seen near Point Dume. A total of 110 schools were counted and it was apparent many more were in the area. The late hour (1800 P. D. T.) and the limited offshore range of the airplane made it impossible to accurately determine the extent and magnitude of the group.

Between Seal Beach and Huntington Beach, 79 dispersed schools of anchovies were counted. As usual, the fish in this area were in a narrow band extending from the surf line to about one-quarter mile offshore. A small group of 59 schools was



Airplane Spotting Flight 59-8 (May 11, 12, and 13, 1959).

present close to shore between the Santa Margarita River and Oceanside.

Dirty water was prevalent in the southern portion of the State, with several outbreaks of red tide. From Ventura to Santa Monica the inshore water was extremely dirty ranging in color from yellow to brown to deep red. In the vicinity of Point Mugu the organisms responsible for the red water had converged into drifts or "windrows" aligned parallel to the shore. Minor occurrences of red tide were also seen off Cambria Pines, in Los Angeles Harbor and near Oceanside.

One large oil spill was seen near Elwood. Although this is one of the natural oil seepage areas, the large slick in question originated at the buoys and pipeline off the Elwood pumping station.

Airplane Spotting Flight 59-11-Pelagic Fish: The inshore area between the Mexican Border and Pigeon Point was surveyed (June 2-4, 1959) by the Department's *Cessna* 170 (1359D) to determine the distribution and abundance of pelagic fish schools.

A heavy overcast hampered observations in the Monterey area, but during periods of clearing adequate coverage was achieved.

For the first time this year, fish schools were seen in Monterey Bay. Most of the schools were anchovies, but four sardine schools were also seen. All but six of these were between Santa Cruz and the Salinas River. They were seen as far offshore as three miles and in very shallow water near the beach. During two afternoons of scouting, only 141 schools were counted. This was but a small frac-

tion of the more than 2,000 present in the Monterey area one year ago. The four sardine schools were small and tight and were noted about one mile offshore between the Pajaro River and Moss Landing.

Between Morro Rock and Cayucos three large anchovy schools were seen and eight similar schools were counted between Pismo Beach and Avila. Four large and five small sardine schools were found one mile off Point San Luis.

Although reports from fishermen and others indicate the presence of large numbers of anchovies in Santa Monica Bay, no schools were seen during this flight.

A total of 24 anchovy schools was present in Los Angeles Harbor and as has been the case all year, anchovies were plentiful close to shore between Seal Beach and Newport Beach. Four sardine schools were seen two miles off the Huntington Beach pier.

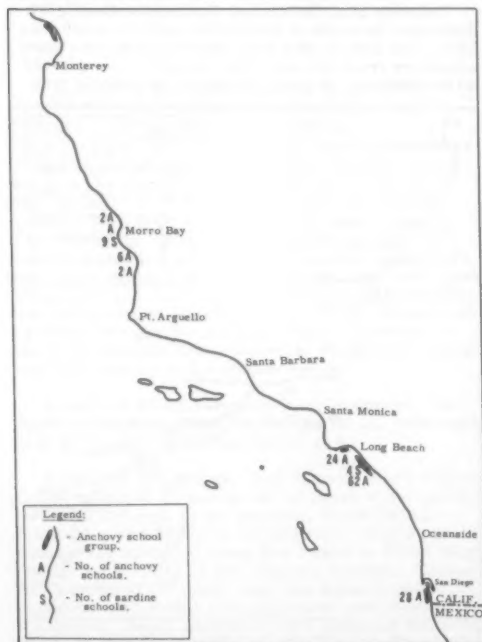
Twenty-eight large anchovy schools were found close to shore between San Diego and the international boundary.

Several spots of red tide were noted in Los Angeles-Long Beach Harbor and three days after the survey an intense outbreak of red water occurred along the beach at Long Beach and Belmont Shore.

Note: Also see *Commercial Fisheries Review*, July 1959, p. 25, and Aug. 1959, p. 18.

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TUNA TAGGED BETWEEN SOUTHERN MEXICO AND PERU (M/V Constitution Cruise 59C1-Tuna): A total of 1,569 tuna were tagged during a March 5-May 23, 1959, cruise to the Central and South American tuna fishing grounds by California Department of Fish and Game biologists aboard the commercial tuna clipper *Constitution*. The tagging operations were part of continuing population, growth, and migration studies. In addition, a comparison was made between the type G spaghetti tag and a new type dart tag (type FT-2) as to ease in tagging and eventual recovery efficiency. Incidental oceanographic observations were made



Airplane Spotting Flight 59-11 (June 2-4, 1959).



M/V *Constitution* Tuna Tagging Cruise 59C1-Tuna (Mar. 5, 1959-May 23, 1959).

Table 1 - Number of Tuna Tagged by Type of Tag and Area of Release

Locality	Type G Spaghetti Tag (Yellow) X-270-1 Secured with a Knot			Type FT-3 (Yellow) Dart Tag		
	Yellowfin Tuna	Skipjack	Total	Yellowfin Tuna	Skipjack	Total
Tehuantepec . . .	11	0	11	11	0	11
Central America . . .	22	4	26	24	1	25
Panama	11	2	13	12	1	13
Ecuador	1	2	3	2	2	4
Guayaquil Gulf . . .	3	7	10	3	7	10
Peru (north)	1	895	896	5	742	747
Total	49	710	759	57	753	810

and marine organisms were collected from 34 live-bait hauls.

During the tagging operations, yellowfin tuna were measured to the nearest $\frac{1}{8}$ centimeter, but skipjack were not measured. The dart tag was found to be much easier and faster to use than the type G tag.

Sea surface temperatures were recorded at all fishing and baiting areas. There was no obvious relationship between surface temperatures at the fishing grounds and the catches of tuna (74.1° F.- 86.5° F.). Surface temperatures at the baiting areas ranged between 65.5° F. and 77.3° F.



Canned Fish

CONSUMER PURCHASES, MAY 1959:

Canned tuna purchases by household consumers in May 1959 were 919,000 cases of which 42,000 cases were imported. By type of pack, domestic-packed tuna purchases were 221,000 cases solid, 556,000 cases chunk, and 100,000 cases grated or flakes. The average



purchase was 1.9 cans at a time. About 30.0 percent of the households bought all types of canned tuna; only 1.7 percent bought the imported product. The average retail price paid for a 7-oz. can of domestic solid or fancy was 34.2 cents and for a $6\frac{1}{2}$ -oz. can of chunk 28.0 cents. Imported solid or fancy was bought at 30.3 cents a can. May purchases were higher than the 847,000 cases bought in April by 8.5 percent; retail prices in most cases were slightly lower.

During May, household consumer purchases of California sardines were 43,000 cases; and 32,000 cases imported sardines. The average purchase was 1.7 cans at a time for California sardines and 1.9 cans for imported. Only 1.6 percent of the households bought canned California sardines and 2.1 percent imported. The average retail price paid for a 1-lb. can of California sardines was 23.9 cents, and for a 4-oz. can of imported 26.0 cents. Retail prices were slightly higher for both California and imported canned sardines. Because of the liberal stocks of canned California sardines, there has been a steady increase in purchases since October 1958.

Canned salmon purchases in May 1959 were 223,000 standard cases, of which 114,000 cases were pinks and 52,000 cases reds. The average purchase was 1.2 cans at a time. About 14.9 percent of the households bought all types of canned salmon; 7.2 percent bought pinks. The average retail price paid for a 1-lb. can of pink was 56.7 cents and for red 86.5 cents. May purchases were down about 2.2 percent from the 228,000 cases bought in April.



Cans--Shipments for Fishery Products, January-May 1959



Total shipments of metal cans for fishery products during January-May 1959 amounted to 43,034 short tons of steel (based on the amount of steel consumed in the manufacture of cans) as compared with 37,809 tons in the same period a year ago. Canning of fishery products in January-May this year was confined largely to tuna, Gulf oysters, and shrimp. Shipments of metal cans for fishery products were up by 24.3 percent from April to May this year and higher by 65.0 percent from May 1958 to this May.

Note: Statistics cover all commercial and captive plants known to be producing metal cans. Reported in base boxes of steel consumed in the manufacture of cans, the data for fishery products are converted to tons of steel by using the factor: 23.0 base boxes of steel equal one short ton of steel.



Central Pacific Fisheries

Investigations^{1/}

ALBACORE TUNA MIGRATIONS IN NORTH PACIFIC STUDIED BY M/V "HUGH M. SMITH" (C-52): Tracing the movements of albacore tuna in the North Pacific between Hawaii and southern California before the commercial fishing season started was the objective of the final cruise (April 28-June 19, 1959) of the research vessel Hugh M. Smith of the U. S. Bureau of Commercial Fisheries. The California Department of Fish and Game research vessel N. B. Scofield also cooperated in the study.



M/V Hugh M. Smith Cruise 52 (April 28-June 19, 1959).

In recent years it has been shown, through recovery of tagged fish, that the albacore migrate seasonally between Japanese and American waters. These commercially-important tuna leave American waters in the fall and spend the winter in Japanese waters, returning to Southern California waters during the spring months. The location and time of entry of the albacore into California waters are being sought.

The results of this joint cruise, with the N. B. Scofield indicate: (1) that there were no albacore in the primary portion

of the survey area (east of 125° W.), and (2) that the spring migration of albacore into the west coast occurred to the north of this primary survey area, where the N. B. Scofield of California caught a number of albacore on trolling gear.

A total of 26 stations were fished from the Hugh M. Smith during the cruise (gill net 13, long-line 9, and scouting 4) and resulted in the capture of 17 tuna. Two albacore and 3 skipjack were captured by trolling (8 lines). All except 1 skipjack were tagged with dart tags and released in good condition. A total of 6 skipjack were netted in the 10 shackles of gill net fished at each station. Two big-eyed were captured on the 20-basket, 12-hook long-line gear especially adapted to fish at depths of 2, 4, 8, and 16 fathoms. Four bonito were captured in the gill net. In addition to tuna, 43 sharks were taken on the gill net and long-line gear. A school of tuna was sighted during the cruise but the species could not be identified.

Photometer stations (37) were occupied at noon of each day except during rough seas. Stations immediately following the gill-net sets were attempted, but were abandoned because of an insufficiency of sunlight. Secchi disc and Forel color measurements were made simultaneously with photometer readings. Carbon-14 samples (43) were usually taken coincident with the noon photometer readings and 8 additional stations were placed in the cruise area where conditions changed abruptly. Eighteen tows of C-14 samples were made for the University of Hawaii.

Surface plankton hauls were made each night with a 1-meter net except when the gill net (anchored to the vessel) was fished or seas were rough. Night-light stations of 1-hour duration were made coincident with each gill-net set.

Bathythermograph (BT) casts were made every 6 hours when running and on all stations. On station both 900-ft. and 450-ft. or 200-ft. casts were made. Surface salinity samples were collected with each BT. Phosphate samples were collected and frozen on each station and every 90 miles along tracks between Oahu and 125° W. Eastward of this longitude they were taken every 30 miles;

^{1/}These investigations prior to the August 1959 Commercial Fisheries Review were listed under Pacific Oceanic Fisheries Investigations.

that is, coincident with each BT cast. The thermograph was operated continuously during the cruise. Four weather observations were made and transmitted each day.

A number of the albacore caught during the cruises by the two vessels were tagged in the hope that their recovery would shed light on the development of concentrations in commercial quantities.

The Hugh M. Smith has been based at and operated by the Bureau's Biological Laboratory at Honolulu. For this cruise the vessel left Honolulu on April 28, but instead of returning to its home port it docked at San Diego, Calif., since it has been transferred to the Bureau's California area office. The vessel will be leased to the Scripps Institution of Oceanography, La Jolla, Calif., for oceanographic and marine biological research.

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BEHAVIOR STUDIES OF SKIPJACK TUNA TO BE MADE DURING HAWAIIAN SUMMER FISHERY: During June 1959, biologists of the Honolulu Biological Laboratory of the U. S. Bureau of Commercial Fisheries were busy preparing for the behavior studies to be conducted during the period of the Hawaiian summer skipjack fishery. The program involves studies both from vessels at sea and of captive tuna held in tanks at the Honolulu Laboratory's dock-site facilities.

The first behavior studies of skipjack in their natural environment and under actual fishing conditions were made from the M/V Charles H. Gilbert in 1956 by an observer equipped with an aqualung. In 1957, an overside "dry" chamber with observing ports was installed. Because of cavitation and resulting bubbles obscuring the underwater view from the ports of the "dry" chamber, a chamber was installed in the hull of the vessel. This installation, completed in late June, has been tested and found to be free from effects of cavitation. The chamber is sufficiently spacious for the observer to use various types of movie and still cameras for photographing the behavior of the fish during normal fishing operations and under experimental conditions.

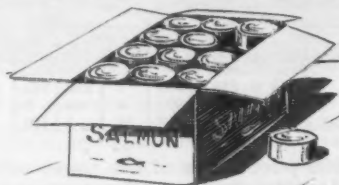
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TAGGING RETURNS INDICATE SKIPJACK TUNA MIGRATE INTO HAWAIIAN WATERS FROM THE WEST: Skipjack tuna tagged in Hawaiian waters by biologists of the U. S. Bureau of Commercial Fisheries Central Pacific Fisheries Investigation continued to be recovered during June. One skipjack, released near the Hawaiian island of Kauai in May 1958, was recovered to the southeast of the nearby island of Lanai. The second recovery was a skipjack released in March 1959 south of the island of Niihau and was recovered to the east near Penguin Banks. These two recoveries of fish tagged and released from the M/V Hugh M. Smith are among the few instances of skipjack that were tagged outside of the fishery and later moved into the fishery. These results tend to support the evidence recently accumulated that the skipjack each spring move into the Hawaiian area from the west.



Federal Purchases of Fishery Products

DEPARTMENT OF DEFENSE CANNED SALMON REQUIREMENTS FOR FISCAL YEARS 1960 AND 1961: Anticipated requirements of canned salmon by the Military Subsistence Market Centers



of the U. S. Department of Defense for the use of the armed forces are as follows: fiscal year 1960 (July-June), 4,578,000 pounds; and fiscal year 1961, 3,135,000 pounds. All purchases for both fiscal years will be made between July and December.

Stocks of canned salmon on hand as of June 30, 1959, amounted to 1,338,000 pounds and estimated stocks on hand as of June 30, 1960, will be about 1,942,000 pounds.

* * * * *

DEPARTMENT OF DEFENSE PURCHASES, JANUARY-JUNE 1959: Fresh and Frozen Fishery Products: For the use of the Armed Forces under the De-

partment of Defense, 2.2 million pounds (value \$1.2 million) of fresh and frozen fishery products were purchased in June 1959 by the Military Subsistence Market Centers. This exceeded the quantity purchased in May by 10.8 percent, but was 3.2 percent under the amount purchased in June 1958. The value of the purchases in June 1959 was higher by 13.0 percent as compared with May, but was down 10.4 percent from June 1958.

Table 1 - Fresh and Frozen Fishery Products Purchased by Military Subsistence Market Centers, June 1959 with Comparisons

QUANTITY				VALUE			
June		Jan. - June		June		Jan. - June	
1959	1958	1959	1958	1959	1958	1959	1958
... (1,000 Lbs.) (\$1,000) ...			
2,212	2,285	11,346	11,595	1,170	1,306	5,987	6,600

Prices paid for fresh and frozen fishery products by the Department of Defense in June 1959 averaged 52.9 cents a pound, 1.1 cents more than the 51.8 cents paid in May, but 4.3 cents less than 57.2 cents paid during June 1958.

Canned Fishery Products: Sardines were the principal canned fishery product purchased for the use of the Armed Forces during June. During January-

Table 2 - Canned Fishery Products Purchased by Military Subsistence Market Centers, June 1959 with Comparisons

Product	QUANTITY				VALUE			
	June		Jan. - June		June		Jan. - June	
	1959	1958	1959	1958	1959	1958	1959	1958
... (1,000 Lbs.) (\$1,000) ...			
Tuna	-	513	1,832	1,783	-	250	868	890
Salmon	5	73	12	1,400	4	44	9	768
Sardine	160	9	669	42	28	3	100	15

June 1959 purchases of the three principal canned fishery products were lower by 22.1 percent from the purchases made from January-June 1958. Purchases of canned tuna were up by 2.7 percent and about 15.0 percent for sardines, but canned salmon purchases were down sharply from the same period in 1958.

Note: Armed Forces installations generally make some local purchases not included in the data given, actual total purchases are higher than indicated, because it is not possible to obtain local purchases.



Fisheries Loan Fund

LOANS APPROVED THROUGH JUNE 30, 1959: As of June 30, 1959, a total of 587 applications for fisheries loans totaling \$18,902,173 had been received. Of these, 317 (\$7,713,233) have been approved, 213 (\$5,780,484) have been declined or found ineligible, 42 (\$1,678,906) have been withdrawn, and 26 (\$3,101,534) are pending. Several of the pending cases have been deferred indefinitely at the request of the applicants. Sufficient funds are available to process new applications when received.

The following loans have been approved between April 1 and June 30, 1959.

New England Area: Alexis Fagonde, Jr., Beals, Me., \$3,000; Murray Pinkham, Boothbay Harbor, Me., \$4,000; Frederick P. Elwell, St. George, Me., \$2,000; Elizabeth N. Corporation, Fairhaven, Mass., \$36,830; Tripolina Bramante, Medford, Mass., \$35,000; C & F Fishing Corporation, New Bedford, Mass., \$46,000; George P. Berry, Port Norris, N. J. \$15,000.

South Atlantic and Gulf Area: Milton A. Danberg, Key West, Fla., \$10,000; Sidney J. Clopton, Pensacola, Fla., \$14,800; W. D. Coons & A. E. Moorner, Mt. Pleasant, S. C., \$17,000.

California: Wm. Howard Day, San Diego, \$19,950; Wm. G. Huston, San Diego, \$7,000; Salvatore Tarantino, San Francisco, \$2,500.

Pacific Northwest Area: Kenneth E. Staffenson, Agate Beach, Oreg., \$3,500; Clayton C. Howe, Anacortes, Wash., \$2,000; Ernest R. Soeneke, Neah Bay, Wash., \$20,000; Alex C. Prankard, Olympia, Wash., \$6,232; Axel & Perry Buholm, Seattle, Wash., \$14,000; Earl E. McCarthy, Seattle, Wash., \$29,600; Ora L. Olson, Snohomish, Wash., \$29,524.

Alaska: Douglas R. Freed, Elfin Cove, \$2,500; Edward K. Haffner, Juneau, \$5,600; Sig Dale, Ketchikan, \$3,305; Victor Edenso, Ketchikan, \$6,000; Arne Iverson, Ketchikan, \$10,500.

Hawaii: Sea Queen Fishing Co., Honolulu, \$20,000.



Fishing Vessel and Gear

Developments^{1/}

EQUIPMENT NOTE NO. 1--NEW ALL-ALUMINUM SALMON GILL-NET BOATS BUILT FOR ALASKA FISHERY:

Ten all-aluminum gill-net vessels for use in the salmon gill-net fishery of Cook Inlet, Alaska, have been designed and constructed recently by a Seattle, Wash., company. The vessels measure 32 feet in over-all length, 11 feet 6 inches in beam, and have a 31-inch draft. They have a displacement of approximately 9,200 pounds and a fish-hold capacity of approximately 27,000 pounds.

a throttle and hydraulic clutch control, one at the pilothouse and one in the fishing cockpit. The pilothouse control is arranged so that it may be operated from inside the house or from the main deck immediately abaft the house.

The galvanized steel fuel tank of 140-gallon capacity is installed under the fishing cockpit, and a 15-gallon fresh-water tank and an 8-gallon aluminum stove-oil tank are mounted in the house top. All piping consists of nylon tubing.

The forecastle contains 2 bunks, an oil stove for cooking, and a stainless steel sink measuring 10 by 12 inches.



Fig. 1 - Two of the ten all-aluminum gill-net boats recently designed and constructed for the Cook Inlet salmon fishery.

The hull is an all-welded structure of $\frac{3}{16}$ -inch aluminum plate with longitudinal framing. Use of outside framing on the bottom facilitates efficient unloading and cleaning of the fish hold. Integral aluminum buoyancy tanks, capable of keeping the vessel afloat when swamped, are built into the bow and stern sections. The house is of combination welded and riveted $\frac{1}{8}$ - and $\frac{3}{16}$ -inch plate. This weather-tight construction eliminates the leakage problem common to wooden houses.

Each vessel is powered with a 165 horsepower gasoline engine used with a 2:1 hydraulic reduction gear to provide a speed of 15 knots--an increase of 7 or 8 knots over the speed of most conventional gill-net boats. Two engine control stations are provided, each consisting of

The increased spaciousness of this area affords much better accommodations than has been customary on conventional boats in the gill-net fishery.

The 10 vessels are equipped with gill-net reels measuring 5 feet in diameter and can be adapted readily for methods of gill-net hauling involving the following equipment: hydraulically-driven stern rollers; hydraulically-driven gill-net reels; or davit mounted, hydraulically-driven, Puretic power blocks.

Use of lightweight aluminum for small-boat construction has many advantages. It tends toward low maintenance costs because the cabin and hull require no paint or caulking and because corrosion and dry rot are not problems. In addition,

^{1/}This article is the first of a series concerned with new developments or improvements in gear, vessels, and related subjects that will be published under the heading "Fishing Gear and Equipment Developments."

aluminum construction permits greater freeboard, 50 percent greater fish capacity, and higher speeds than conventional designs of the same size. Bacteria and odors cannot penetrate the hold, and consequently better quality fish are assured.

Construction of the all-aluminum gill-net boats follows the successful employment of aluminum purse-seine boats in the Atlantic Coast menhaden fishery.

--By Fred Wathne, Fishery Methods & Equipment Specialist
Branch of Exploratory Fishing & Gear Research
Division of Industrial Research & Services
Seattle, Wash.



Frozen Food

PROPOSED HANDLING CODE: At the annual meeting of the Association of Food and Drug Officials of the United States (AFDOUS), held in Boston, Mass., a proposed handling code for the Frozen Food Industry was presented. The code involves (1) Retail Refrigeration Equipment and (2) Refrigeration Equipment for Freezing, Storage and Transportation of Frozen Foods. Each of these sections of the over-all code, as read at the meeting, calls for frozen foods to be maintained at 0° F. or lower at all times. The responsibility for compliance would rest with the processor of the product. Receivers at warehouses, for transportation firms, and for retail establishments would not be permitted to accept shipments if the internal temperature exceeded 0° F. U.S. Bureau of Commercial Fisheries and industry advisors serving on the subcommittees which wrote the code realize that present refrigeration equipment, especially in the retail and transportation industries, cannot immediately meet the 0° F. requirement. Therefore, an administrative tolerance was established in the temperature requirements and also in the time needed to fully comply with the code.

The adoption of this Frozen Food Handling Code by AFDOUS, of course, does not automatically make it mandatory. However, it is intended as a strong recommendation to state and municipal legislative bodies and regulatory agen-

cies in writing their local laws. A prime purpose of AFDOUS is to foster uniformity in food and drug laws in the several states. It is predicted that quite a number of states will very soon be considering laws or administrative regulations based on the AFDOUS Code.



Great Lakes

PICKEREL FLUCTUATIONS BEING STUDIED: The serious problem of drastic fluctuations in the occurrence of pickerel and other important Great Lakes fish is being studied by biologists of the U. S. Bureau of Commercial Fisheries in cooperation with the fish and wildlife agencies of the States bordering the Lakes. At the present time there is no evidence to support the view that commercial fishermen have caused the decline of pickerel in Lake Erie. The studies thus far show that the important species of fish in Lake Erie, including the pickerel, fluctuate naturally because of uncertainties in the Lake itself.

At times a complete loss of the reproduction of the important species leaves a dearth of the fish in the Lake for a period of years. Sometimes these same conditions which cause drastic declines in the abundance of one species act favorably upon the reproductive processes of other species and the result is that there is a natural waxing and waning of many of the fish populations in Lake Erie. Studies on Lake Erie over the past 50 years have shown substantially the same picture. These fluctuations in abundance appear to be caused by the shallow nature of Lake Erie and its position with respect to the prevailing winds which affect the temperature and lake stratification in both summer and winter.

Even though there is no evidence that the commercial fisheries of Canada or of the United States have affected these valuable sport fisheries, the International Great Lakes Fishery Commission is now studying this problem.

SEA LAMPREY CONTROL STUDIES: To save lake trout and other fish from the predatory sea lamprey and, therefore, preserve the livelihood of many fishermen, the U. S. Bureau of Commercial Fisheries, the Great Lakes States, and Canada conduct research and test control measures against sea lampreys. Success in developing and testing selective toxicants that destroy lamprey larvae without significantly harming fish and other aquatic organisms made possible full-scale chemical control operations in streams tributary to the south shore of Lake Superior throughout fiscal 1959. By the end of the year the toxicant had been successfully applied to half of the United States tributaries that will require treatment.

Electrical barriers are still operated on Lake Superior to prevent lamprey reinfestation of treated tributaries and to provide a measure of results from chemical control. The lamprey research and control program is carried out under contract with the Great Lakes Fisheries Commission, established by treaty with Canada in 1956.



Great Lakes Fisheries Exploration and Gear Research

EXPLORATORY FISHING IN LAKE ERIE CONTINUED (M/V *Active* Cruise 2): To obtain information on the seasonal distribution and commercial availability of smelt and other fish stocks in west central Lake Erie between Sandusky and Cleveland, Ohio, surface-scouting and echo-sounding operations were conducted on a 15-day (June 2-24) exploratory cruise by the U. S. Bureau of Commercial Fisheries chartered vessel *Active*.

Forty-five tows were completed, using a standard 50-foot two-seam balloon trash-fish trawl, with a $1\frac{1}{4}$ -inch mesh bag. Gear damage to trawls was light. Due to the absence of surface schools of fish, no seine fishing was tried.

Commercial concentrations of smelt were found over the area from Huron to

Cleveland, at depths greater than 7 fathoms. The best catches were made northeast of Lorain, where up to 500 pounds of smelt, 12 to 18 to the pound, were taken per half-hour tow. Trawl tows near Cleveland produced mixed catches up to 100 pounds of yellow perch, sheepshead, white bass, and smaller smelt, averaging 35 to 40 to the pound.



M/V *Active* Cruise 2 (June 2-24, 1959).

With few exceptions, at depths beyond 10 fathoms, smelt were found at mid-water levels above the reach of bottom-trawl gear. With the approach of seasonal stratification of the lake, smelt have, in the past, tended to remain within the thermocline or in areas where bottom temperatures are considerably below surface temperatures. Surface temperatures ranged from 66° F. to 75° F. Bottom temperatures ranged from 60° F. at 5 fathoms to 44° F. at 13 fathoms.

The cruise was interrupted June 8 to 12 to demonstrate trawling operations to interested commercial fishermen at Sandusky, Huron, Vermilion, and Lorain, Ohio.

The M/V *Active* was scheduled to leave Sandusky, Ohio, about July 6, on a third 15-day exploratory fishing and gear research cruise. The area of operations was to be Cleveland to Conneaut, Ohio.

Note: Also see *Commercial Fisheries Review*, June 1959, p. 36.



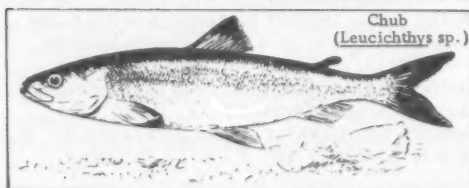
Great Lakes Fishery Investigations

SURVEY OF SOUTHEASTERN LAKE SUPERIOR BY M/V "CISCO": Studies on the life history of fish in southeastern Lake Superior were begun by the U. S. Bureau of Commercial Fisheries research vessel *Cisco*. The primary objectives of the work by the *Cisco* during 1959 will be to determine the abundance, composition, and distribution of the fish stocks, with emphasis on lake trout and chubs. Much of the life-history and population studies of lake trout in 1953 by the *Cisco* will be repeated this year to determine what changes have taken place during the past 6 years of severe sea-lam-prey infestation.

Cruise 1 (May 19-June 2, 1959): The first cruise of the 1959 season covered the southeastern area of Lake Superior from Marquette to Whitefish Bay. A major portion of the cruise was spent fishing gill nets. Some trawling and hydrographic work was done.

The gill nets used this year are made to fit, as closely as possible, the standards established for this type of gear by the several agencies investigating the fisheries of the Great Lakes. Ordinarily, the gangs which the *Cisco* will set include a "standard gang," also used by the research vessel *Siscowet* in the western end of Lake Superior, plus some additional mesh. A standard gang will be as follows: 150 feet each of $1\frac{1}{2}$ - and $1\frac{1}{4}$ -inch mesh; 200 feet of 2-inch mesh; and 300 feet each of $2\frac{1}{2}$ -, $2\frac{3}{4}$ -, $3\frac{1}{2}$ -, $4\frac{1}{2}$ -, $5\frac{1}{2}$ -, and 6-inch mesh. The length of each mesh may be varied, however, to assure a representative catch of fish vulnerable to each mesh size.

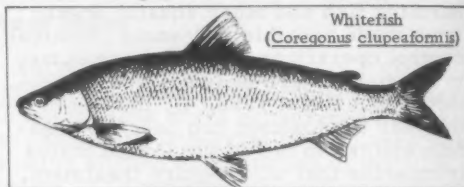
Standard gangs were set at 2½ and 36 fathoms in Munising Bay, at 25, 50, 75, and 100 fathoms off Grand Marais, and at 13, 25, 50, and 70 fathoms in Whitefish Bay. A smaller gang (100 feet each of 2- and $2\frac{1}{2}$ -inch mesh and 300 feet of $3\frac{1}{2}$ -inch mesh) was also set at 36 fathoms in Munising Bay. The greatest numbers of chubs (*Leucichthys* sp.) were



taken at 50 and 75 fathoms off Grand Marais and at 50 fathoms in Whitefish Bay. *L. reighardi*, which was near the end of its spawning season, predominated off Grand Marais (of 152 chubs caught at 75 fathoms, 95 were *L. reighardi*) and together with *L. hoyi* made up the bulk of the chub catches in most other sets. Other chubs included *L. kiyi* (44 off Grand Marais at 75 fathoms, a few elsewhere) and *L. zenithicus* (very few).

Lake herring were fairly numerous in the 13-fathom set in Whitefish Bay, but only a few were taken in other sets. A total of 17 lake trout was caught in the gill nets—all but one in 50-fathom nets. They ranged in length from 11.5 to 21.8 inches. One of the trout carried a tag indicating it was a hatchery fish. Whitefish were taken only in Muni-

sing Bay, 73 in the 36-fathom sets and 1 in the $2\frac{1}{2}$ -fathom nets. Twenty menominee (round) whitefish were caught in the 13-fathom set in Whitefish Bay and in the $2\frac{1}{2}$ -fathom gang in Munising Bay, but they were scarce or lacking in other sets. Other species taken in the gill nets were burbot (a few at all depths), longnose suckers (47 in the $2\frac{1}{2}$ -fathom set in Munising Bay, 2 in the 13-fathom gang in Whitefish Bay), white suckers (26 at $2\frac{1}{2}$ fathoms in Munising Bay), smelt (27 at 25 fathoms in Whitefish Bay, uncommon elsewhere), alewives (2 in the 50-fathom set in Whitefish Bay), and lake northern chubs (15 at $2\frac{1}{2}$ fathoms in Munising Bay).



Trawls were towed at several depths ranging from 8 to 36 fathoms off Laughing Fish Point, in Munising Bay, and off Grand Marais. Most catches were extremely light and nothing was taken in some tows. Species represented were nine-spine sticklebacks, trout-perch, smelt (mostly yearlings), silmy sculpins, deep-water sculpins, *L. kiyi*, and whitefish (the latter two species taken at 25 to 34 fathoms in Munising Bay).

Hydrographic information (water samples for oxygen, pH, alkalinity, and other chemical determinations, bottom and plankton samples, Secchi-disc readings, bathythermograph tracings) was collected at 45 fathoms off Grand Marais and 70 fathoms in Whitefish Bay. Similar data were collected from the former area in 1953 by the *Cisco*.

Lake Superior water was very cold during this cruise, averaging about 2° C. (35.6° F.) away from shore. Extremes recorded were 1.5° C. (34.7° F.) and 9.2° C. (48.6° F.). The water was generally homothermous vertically, but at some stations slight warming in the upper levels was apparent. On a few occasions bathythermograph tracings showed colder water in the upper strata than below.

Cruise 2 (June 9-23): During this cruise, the *Cisco* operated in that portion of southeastern Lake Superior between Munising and Keweenaw Bay, Mich.

Standard gangs of gill nets were set at 15 fathoms in Shelter Bay, and at 25, 38, 50 (2 gangs), 75, and 100 fathoms off Marquette, and at 25, 38, 50, and 80 fathoms in Keweenaw Bay. The 15-fathom net in Shelter Bay yielded only 4 fish, all lake herring. Chub catches off Marquette were light at 25 fathoms (only 2) and 100 fathoms (43), and moderate at 38 fathoms (116), 50 fathoms (average of 105 per gang), and 75 fathoms (212). *Leucichthys reighardi* made up 84 percent of the catch at 38 fathoms and constituted the bulk of the catch together with *L. hoyi* at 50 fathoms and *L. kiyi* at 75 and 100 fathoms. A few each *L. zenithicus*, *L. nigripinnis*, and lake herring were also taken. Most *L. reighardi* has spawned, but a few ripe and gravid ones remained. Four lake trout were caught at 25 fathoms, 6 at 38 fathoms, 7 to 50 fathoms (both gangs), and 4 at 75 fathoms. The latter 4 were siscowets, 5 to 7 pounds

each. All lake trout in good condition were marked with spaghetti tags and released. Of special interest was a brook trout taken in the 100-fathom nets. Other species caught in the gill nets off Marquette were burbot (all depths--the smaller ones in deeper water) and deep-water sculpins (75 and 100 fathoms only).

Chub catches in Keweenaw Bay were light at 25 and 80 fathoms (64 and 47 respectively), and moderate at 38 and 50 fathoms (236 and 164 respectively). *L. hoyi* was the most common species at 38 and 50 fathoms, especially at the former depth where it made up 81 percent of the catch. *L. zenithicus* was the most numerous of the chubs at 25 fathoms and *L. reighardi* at 80 fathoms. *L. reighardi* appeared at all depths in fair numbers. Lake herring were taken at all depths except 50 fathoms, but were not numerous except at 25 fathoms. *L. kiwi* was absent at 38 fathoms and scarce at all other depths. Other species were lake trout (1 at 25 fathoms, 2 at 38 fathoms, one of the latter a fin-clipped hatchery trout), smelt (a few in the small mesh at 25 fathoms), burbot (1 at 50 fathoms), pygmy whitefish (2 at 38 fathoms) and sauger (a 1½-pound specimen at 38 fathoms, a rather unusual catch).

Trawls were towed at several depths from 14 to 35 fathoms in Shelter Bay, 8 to 20 fathoms near Traverse Island in Keweenaw Bay, and 24 to 46 fathoms near Pequaming Point in Keweenaw Bay. The trawling in Shelter Bay yielded a few slimy sculpins, ninespine sticklebacks, small smelt, small coregonids, trout-perch (rare), and pygmy whitefish (17 fathoms and deeper). No baby lake trout were caught, although they were fairly numerous in the area at this time of year in 1953. No lake trout were taken off Traverse Island either, but this area was somewhat more productive than Shelter Bay in other species. Slimy sculpins were numerous and ninespine sticklebacks fairly common from 8 to 15 fathoms, and 2- to 4-inch smelt (probably yearlings) were abundant from 8 to 12 fathoms. Pygmy whitefish were taken at 15 fathoms (8) and 20 fathoms (5). Other species were menominee whitefish (a 4½-inch one at 8 fathoms), 2- to 3-inch coregonids (mostly at 15 fathoms), and trout perch (rare 15-20 fathoms).

In the tows off Pequaming Point catches were by far the largest. A total of 19 lake trout were caught, of which 15 (about 8 inches in length) were recently stocked in Keweenaw Bay. The others were natural stock. Twelve of the trout were caught in a single 10-minute tow from 40 to 28 fathoms. On the basis of the rather scanty evidence at hand, the natural stock of small lake trout in Keweenaw Bay seems appreciably smaller than at this time in 1953. The trawls in the Pequaming Point area brought up large numbers of *L. hoyi* (635 in a 10-minute tow at 35 fathoms). Nearly 4,000 small (3- to 4-inch) unidentified coregonids, probably mostly *hoyi*, were caught in a tow at 25 fathoms. The other species of chubs were present in much smaller numbers. As many as 148 pygmy whitefish were caught per tow. Adult smelt were common at 25 fathoms, and some were caught as deep as 40 fathoms. Ninespine sticklebacks and slimy sculpins were common at all depths. Trout-perch were rare. A few deep-water sculpins were caught at depths greater than 40 fathoms.

Hydrographic data and samples were collected in Shelter Bay (15 fathoms), off Big Bay Point (45 fathoms), and in Keweenaw Bay (30 fathoms). The station off Big Bay Point was visited regularly in 1953. Drift bottles were released at 5 locations between Big Bay Point and Keweenaw Bay.

Surface-water temperature had risen considerably since Cruise 1, and thermal stratification was evident in all but the deepest areas visited. The surface temperature range was 2.9° C. to 14.1° C. (37.2° F. to 57.3° F.).

Note: Also see Commercial Fisheries Review, July 1959, p. 31.

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WESTERN LAKE ERIE BIOLOGICAL RESEARCH CONTINUED (M/V "George L." Cruises 3 and 4):

Cruise 3 (May 1959): The first of three "Index" cruises slated for 1959 was completed by the U. S. Bureau of Commercial Fisheries research vessel *George L.* Seven stations in the western end of Lake Erie were visited, and fish were collected by trawl, gill net, and small tow nets. Perch and spot-tail shiners were the most common fish taken in the trawls. Other less abundant species were smelt, sheepshead, and emerald shiner. Yellow perch and sheepshead were the most common species taken in the gill nets. Small gizzard shad and alewives, abundant in trawl catches late in 1958, have not been taken by trawl or gill net this year. Only one yellow pike (walleye) was taken during the cruise.

Tow nets, used to capture fish fry, caught mostly yellow perch and smelt. Yellow perch fry were found in all areas of western Lake Erie but were taken in greatest numbers in Sandusky Bay and near Middle Bass Island. Smelt were also found at nearly all stations. Yellow perch and smelt fry were usually found near the bottom and at mid-water in the open lake. A few yellow pike fry were taken in Sandusky Bay.



In late May, Bureau biologists cooperated with the Ohio Division of Wildlife in conducting a study of the behavior of movement of stocked yellow pike fry in the open waters of Lake Erie. Previous to the stocking east of Middle Bass Island, tow nets were used to determine the abundance and species composition of fry already present in the area to be stocked. Yellow perch sac fry were found to be abundant. No yellow pike fry were taken. Two and one-half million yellow pike sac fry were then stocked in a 1-acre area, marked with buoys, over a mud bottom in 22 feet of water. Tows at all depths in the marked area and surrounding waters shortly after stocking caught yellow pike fry, but the total catch of all fry increased by only 28 percent. A large percentage of the fry taken was near the bottom. Three hours after stocking few yellow pike

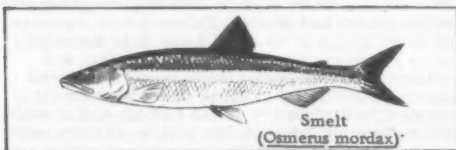
fry were captured although perch fry were still taken in large numbers. Tows in the area one week later caught no yellow pike, but perch fry were still present.

Limnological and meteorological data collected at each index station included bottom organisms, plankton, water temperatures, turbidity, water quality, oxygen, weather and sea conditions, water currents. . . . Water temperatures were much higher in 1959 than during the same period in 1958. In late May of 1958 and 1959 surface water temperatures in the western basin averaged about 62° F. and 70° F., respectively.

Diatoms were common in Lake Erie water in early May but were much less abundant in late May when Entomostracans, principally *Daphnia*, *Leptodora*, and *Diaptomus*, became concentrated at mid-water and bottom depths.

Cruise 4 (June 1959): Much of the month was spent locating young fish and measuring their relative abundance in the western basin and Sandusky Bay. Eighty 10-minute trawl hauls were made by the *George L. and Madtom* in the Sandusky Bay, Bass Islands, and Port Clinton areas between June 15 and July 1.

Young yellow perch appeared in large numbers in almost all waters west of Huron, Ohio, but were most abundant in Sandusky Bay. Young perch were about 1 inch long by mid-June and about 1.5 inches long by the end of the month.



Smelt
(*Osmerus mordax*)

Young smelt were common in all catches but appeared to be most abundant in water over 20 feet deep. Young white bass and gizzard shad were caught in fairly large numbers by the end of the month in Sandusky Bay but only a few had been taken from the lake proper. Young spot-tail shiners and trout-perch were found at almost all stations--young sheepshead were taken in Sandusky Bay only. The first hatches of emerald shiners were observed during the last week of June.

Catches of young yellow pike were made in Sandusky Bay, in the immediately adjacent lake area, and in the bay between Catawaba Point and Port Clinton. Their lengths ranged about mean of 2½ to 3 inches. In the main lake most young yellow pike were taken over both mud and sandy bottoms in water between 10 and 20 feet deep. Only one young yellow pike was taken in the Island area.

The food habits of some of the fish were observed during the period. Yearling white bass 4-6 inches in length fed almost entirely upon young perch. Young spot-tail shiners, white bass, smelt, and walleye, and adult spot-tail and emerald shiners were also found in white bass stomachs.

Food of the baby yellow pike consisted almost entirely of young fish about 1-inch long, most of which appeared to be young yellow perch. Large

sheepshead, yellow perch, and channel catfish occasionally gorged on young fish, although the bulk of their food consisted of non-fish items.

Note: Also see *Commercial Fisheries Review*, July 1959, p. 32.

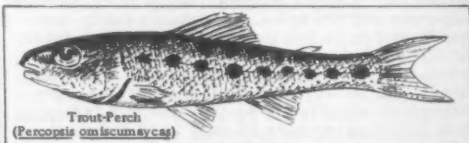
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WESTERN LAKE SUPERIOR FISHERY SURVEY
CONTINUED (M/V *Siscowet* Cruise 2): Environmental conditions were studied at three index stations, two of which were established by the U. S. Bureau of Commercial Fisheries research vessel *Siscowet* during the 1958 season. These index stations are located (1) southeast of Stockton Island, (2) northeast of Bear Island, and (3) east of Pike's Bay. The station east of Pike's Bay replaces a previous station located north of Little Girl's Point, Mich.

At each index station standard gill-net gangs (1" to 5" by ½" intervals) were fished. From one to three trawl tows were made at each station with a 30-foot semi-balloon trawl. Water temperatures, water samples for chemical analyses (dissolved oxygen, total alkalinity, . . .), plankton and bottom samples, Secchi-disc readings, and observations of currents were also recorded.

In addition, various types of experimental gear were fished northwest of Michigan Island, east of Oak Island, west of Bear Island, and east of Raspberry Island. The gear consisted of small-mesh trawls and gill nets, ½-meter plankton nets (32 grit cloth), ½- and ¼-inch mesh minnow traps, and standard 300-hook bait lines.

Gill-net catches southeast of Stockton Island (25 fathoms) took small numbers of lake trout, whitefish, menominee whitefish, longnose suckers, and burbot. Trout-perch dominated the catch from three trawl tows. Other species taken in the trawl



Trout-Perch
(*Percaopsis micropomus*)

were chubs (*Leucichthys hoyi*), pygmy whitefish, smelt, ninespine stickleback, slimy muddler, lake herring, and lake trout. A 12-inch diameter plankton net (No. 0 mesh) attached to the trawl took one fish larva, tentatively identified as smelt.

Gill nets set northeast of Bear Island (38 fathoms) took 558 *L. hoyi* with lesser numbers of *L. zenithicus*, *L. fryi*, lake herring, and lake trout. One adult alewife, the first encountered by the *Siscowet* in Lake Superior, was also taken in this set.



Ninespine Stickleback
(*Pungitius pungitius*)

L. hoyi dominated the catch from two trawl tows. Other species taken were *L. zenithicus*, smelt, ninespine stickleback, slimy muddler, spoonhead muddler, and herring. The 12-inch diameter plankton net took one unidentified fish larva.

The gill nets east of Pike's Bay (22 fathoms) took 408 smelt, 106 *L. hoyi*, and 22 lake trout.

Lesser numbers of longnose suckers, lake herring, and trout-perch were also captured. One trawl tow captured 276 smelt, 59 *L. hoyi*, 7 lake trout, and 1 whitefish. Large numbers of trout-perch and a few slimy muddlers and ninespine sticklebacks were also taken.

One 300-hook line baited with small chubs (*L. hoyi*) was set between Madeline and Stockton Islands. The line was lifted 3 days later, and the catch consisted of 3 burbot and one small lake trout.

Six wire minnow traps were set southeast of Stockton Island and northwest of Michigan Island. At each location a trap was set at 1, 5, 10, 15, 20, and 30 fathoms. Some of the traps were baited with bread, crackers, and cheese. Others were unbaited. A very few slimy muddlers and sticklebacks were the only species taken at both the Stockton and Michigan Island sets.



A set of three gill nets (1-, 1½-, and 2-inch mesh) east of Oak Island (15-27 fathoms) took mostly smelt and *L. hoyi*. Lesser catches of *L. zenithicus*, lake herring, and lake trout were taken.

Trawl tows east of Raspberry Island were made at 5 fathoms and 16 fathoms. The tow at 5 fathoms took 900 ninespine sticklebacks with lesser catches of slimy muddlers, smelt, menominee whitefish, and lake herring. The tow at 16 fathoms took 15 smelt with lesser catches of trout-perch, sticklebacks, slimy muddlers, and lake herring.

Trawl tows west of Bear Island were made at 6 fathoms and 13 fathoms over a sandy bottom. The catch at 6 fathoms was dominated by ninespine sticklebacks. A few small smelt, and slimy muddlers were also taken. At 13 fathoms the slimy muddlers dominated the catch. Several fish larvae and 4 yearling lake herring were taken at this depth.

Surface temperatures varied from 40.2° F. north-east of Bear Island to 56.7° F. west of Bear Island. Bottom temperatures varied from 40.5° F. south-east of Stockton Island (40 fathoms) to 42.8° F. at Pike's Bay (20 fathoms). Slight thermal stratification appeared east of Pike's Bay.

Note: Also see *Commercial Fisheries Review*, July 1959, p. 32.



Gulf Exploratory Fishery Program

UNDERWATER OBSERVATION OF SHRIMP TRAWL (M/V *Charles M. Bowers* Cruise 20): Underwater observations of the operation of a 40-foot flat shrimp trawl were made by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel *George M. Bowers* June 2-23. The work was carried out in the vicinity

of Eleuthera Island, Bahama Islands, an area characterized by clear water conditions and smooth white sand bottom, at depths of 30 and 40 feet.

The observations were made from a diving sled manned by two SCUBA divers while being towed by the vessel. Motion pictures of the trawl and trawl boards were obtained with underwater cameras mounted on the sled.



U. S. Bureau of Commercial Fisheries exploratory fishing vessel *George M. Bowers*.

This is the first of a scheduled series of cruises to obtain photographic records of the performance of the various designs of trawling gear used in the United States' shrimp fishery.



Gulf of Mexico

INDUSTRIAL FISHERY STUDIES: The heaviest industrial fishing in the Gulf of Mexico occurs in Mississippi Sound and off the Mississippi River Delta in waters less than 20 fathoms deep. This was revealed by studies conducted by the U. S. Bureau of Commercial Fisheries Galveston, Tex., Biological Laboratory. The fish caught by the Gulf industrial fishery are used for pet food, fish meal for hog and poultry feed, frozen mink food, and fish oils. There are 104 species, comprising 55 families, represented in the

catches. Croakers, spots, white trout, and porgies account for about 75 percent of the catch.



Iowa

REGULATIONS ON COMMERCIAL FISHING ON THE MISSISSIPPI RIVER ENFORCED: Since June 15, Iowa conservation officers have been making a concentrated check of commercial fishing equipment on the Mississippi River along the southern half of the State. So far they have confiscated more than 200 pieces of illegal gear (including 200 baskets, 107 hoop nets, 7 trammel nets, and one gill net) valued at \$4,000-\$5,000. If not claimed, the gear will be disposed of by the State Conservation Commission.

The new regulations which went into effect July 4 are of importance to persons now engaged in commercial fishing. Owners of fishing equipment must have a \$15 owner's certificate and anyone using such gear must have an operator's license costing one dollar, obtainable from the State Conservation Commission in Des Moines. A pole-and-line fisherman can have one trot line and one fish trap without an operator's license, but must pay a dollar per trot line and trap. Copies of the revised laws are available from the Des Moines offices of the Iowa Conservation Commission and from conservation officers of the counties bordering the Mississippi and Missouri rivers.



Maine Sardines

CANNED STOCKS, JUNE 1, 1959: Distributors' stocks of Maine sardines totaled 197,000 actual cases on June 1, 1959--down 40,000 cases or 17 percent from the 237,000 cases on hand June 1, 1958. Stocks held by distributors on April 1, 1959, amounted to 254,000 cases, and on January 1, 1959, totaled 268,000 cases, according to estimates made by the U. S. Bureau of the Census.

Canners' stocks on June 1, 1959, totaled 272,000 cases (100 $3\frac{1}{2}$ -oz. cans), an in-

crease of 37,000 cases (16 percent) as compared with June 1, 1958, and a decrease of 69.5 percent (619,000 cases) from the 891,000 cases on hand January 1, 1959.

Table 1 - Canned Maine Sardines--Wholesale Distributors and Canners' Stocks, June 1, 1959, with Comparisons^{1/}

Type	Unit	1958/59 Season			
		6/1/59	4/1/59	1/1/59	11/1/58
Distributors	1,000 Actual Cases	197	254	268	312
Canners	1,000 Standard Cases	272	474	891	1,037

Type	Unit	1957/58 Season			
		7/1/58	6/1/58	4/1/58	1/1/58
Distributors	1,000 Actual Cases	237	293	230	184
Canners	1,000 Standard Cases	235	476	1,111	386

^{1/}Table represents marketing season from November 1-October 31.

^{2/}100 $3\frac{1}{2}$ -oz. cans equal one standard case.

The total supply at the canners' level (packing season beginning April 15, 1958, and ending December 1, 1958) as of June 1, 1959, amounted to 2,434,000 standard cases, about 4.3 percent less than the total supply of 2,543,000 cases as of June 1, 1958. The carryover on April 15, 1959, was about 420,000 cases. No appreciable quantity of sardines was canned April 15-June 1, 1959.

The packing season opened on April 15, 1959, but packing did not start until about June 1. The early catches were made up of fish too large for canning.

MASSACHUSETTS SCHOOLS' WORKSHOP MORNING SESSION DEVOTED TO MAINE SARDINES: Maine sardines played a major role in the 25th Annual Workshop of the State of Massachusetts educational system, held at Fitchburg in mid-July. One entire morning program, attended by several hundred school-lunch supervisors and home economists, was devoted to canned Maine sardines.



The showing of a film on the Maine sardine industry was followed by an hour-and-a-half demonstration on the uses and preparation of canned Maine sardines in school lunches.

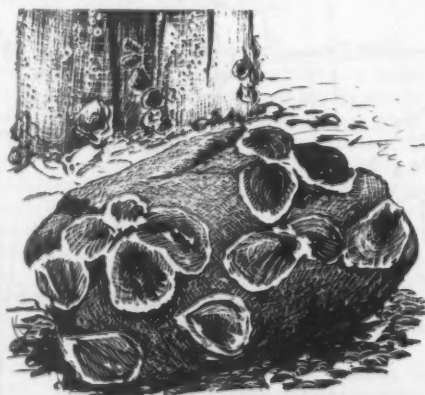
The Maine Sardine Council said that, "This is the kickoff of a major effort to promote the use and sale of Maine sardines in the vast national school-lunch program."

He said that Massachusetts alone served more than 45 million school lunches a year and participation in the Workshop came after the Council had held acceptability tests in a number of that State's schools. According to the Council, school authorities are looking for low-cost, nourishing fish products for school-lunch programs and it appears that sardines have a great opportunity to develop a major new market in this type of promotion.



Maryland

OYSTER SPAT COUNT ON TEST SHELLS, 1959 SEASON: Biologists of Maryland's Chesapeake Biological Laboratory are studying the number of oyster spat found on 20 clean faces of shells exposed in small wire bags for approximately 1-2 week intervals to determine the intensity of the oyster set in Maryland's waters. Most of the spat are of microscopic size since new shells are used for each exposure.



Oyster spat (magnified many times) on small pebble.

Water temperatures high enough to initiate spawning were reached in all collecting areas during late May and early June. A few spat appeared at some stations in early June. Mid-June was

marked by a cool spell that dropped water temperatures by as much as 10° F. During late June water temperatures rose into the eighties. An onset of fair setting occurred in St. Marys River, Holland Straits, and Smith Creek during the first week of July. The attachment of fouling organisms to the cultch was light up to the early part of July.



North Atlantic Fisheries Exploration and Gear Research

PROMISING CATCHES OF THE DEEP-WATER RED CRAB MADE BY M/V "DELAWARE" (Cruise 59-7): Promising quantities of red crabs (*Geryon quinquedens*) were found between Cape Hatteras, N. C., and Cape May, N. J., in depths of 200-350 fathoms during an exploratory fishing cruise by the U. S. Bureau of Commercial Fisheries vessel Delaware.



M/V Delaware Cruise 59-7 (June 25-July 2, 1959).

The crab exploration began at Norfolk on June 25 and ended July 2, when the Delaware reached Gloucester, Mass.

In the course of the cruise, 30 exploratory trawl stations were made to investigate the commercial potential of red crabs, the presence and abundance of which were reported by W. C. Schroeder (1955) following explorations in 1952-53. The depths trawled ranged from 60-350 fathoms. Red crabs were caught at 21 stations; the most productive stations were in depths of 200 fathoms or more. A total of 1,375 crabs were taken (the estimated weight was 2,073 pounds).

The largest single catch of crabs was made east of Ocean City, Md. (see chart, station 25). The red crab catch at this station was 386 crabs in a 70-minute tow; the estimated weight of this catch was 558 pounds. This was the only station from which crabs were taken in near commercial quantities. Further investigations may define areas of local concentration where commercial exploitation could be feasible.

Several hundred red crabs were steamed aboard the vessel so that the crew members could taste-test the meat. The consensus was that the meat was excellent.

A total of 32 lobsters (*Homarus americanus*) were taken from 11 stations in depths ranging from 60-275 fathoms. The largest single catch was 12 lobsters at station 23 (see chart). Whiting (*Merluccius bilinearis*) was found to occur at most of the stations in quantities ranging from 5-100 pounds per tow. No other commercially-valuable species of fish or shellfish were caught in appreciable quantities.

A standard New England type No. 36 net (60-foot headrope, 80-foot footrope) with chain-weighted footrope and $\frac{1}{4}$ -inch liner was used. The net was rigged with 10-fathom ground cables. No gear loss or significant damage was experienced.

In cooperation with Woods Hole Oceanographic Institution, a total of 576 drift bottles were released from 96 locations. Biological specimens were collected and preserved for later study. Bathythermograph casts were taken along with other hydrographic data.

The M/V *Delaware* left Gloucester, Mass., for cruise 59-8 on July 8, 1959.

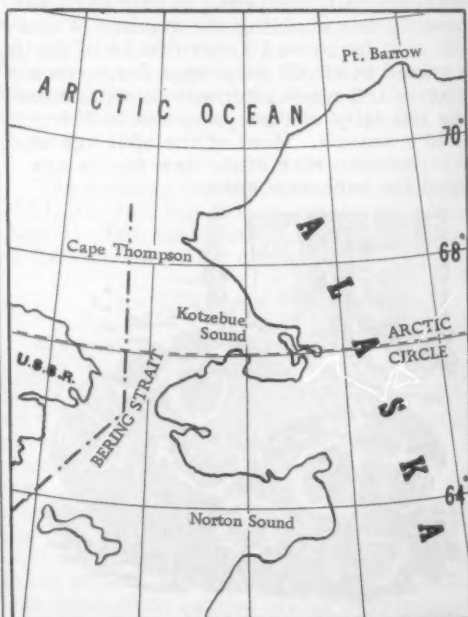
After loading television equipment at Woods Hole, Mass., the vessel was expected to conduct closed circuit underwater television operations off Cape Cod.

Conditions permitting, kinescope recordings were to be made showing the operation of various portions of the trawl net in operation.



North Pacific Exploratory Fishery Program

EXPLORATORY FISHING VESSEL TO ASSESS FISHERY POTENTIAL AND COLLECT OCEANOGRAPHIC DATA IN ARCTIC OCEAN'S CHUKCHI SEA (M/V John N. Cobb Cruise 43): The U. S. Bureau of Commercial Fisheries exploratory fishing vessel John N. Cobb departed from Seattle on July 23 for a 60-day cruise which will take the vessel 3,300 miles to



M/V John N. Cobb Cruise 43 (July 23-Sept. 15, 1959).

Chukchi Sea in the Arctic Ocean. The investigation in the Chukchi Sea, which will be a cooperative study carried out by the Bureau and the U. S. Atomic Energy Commission (AEC), will be the farthest that

the vessel has operated from Seattle since its launching in 1950. She will return to Seattle, Wash., about September 15.

The John N. Cobb is scheduled to carry out explorations in the area from Bering Strait north to the Arctic ice field. The vessel will carry out investigations contiguous to the coast of north-west Alaska and westward to the United States-Soviet treaty line of 1867.

The objectives of the cruise are to carry out detailed studies of the varieties, quantities, and distribution of fish, shellfish, marine mammals, and birds inhabiting the Chukchi Sea region and to acquire information on the physical and chemical properties of these Arctic waters. The information obtained concerning the concentrations of fish and shellfish will be used to assess the commercial fishing potential of the region, and to provide the AEC with data to evaluate the possible biological damage which might occur in the event nuclear devices are detonated in the area. The Commission is studying the possibility of detonating several atomic devices to determine the feasibility of using nuclear energy for excavating harbors, canals, etc. Oceanographic information will be used to supplement data being acquired by the University of Washington oceanographic vessel Brown Bear.

The Bureau's vessel will be equipped with perhaps the widest variety of sampling devices ever taken on an exploratory fishing expedition. Sampling gear which will be aboard will include standard mesh otter trawls, small mesh trawls, biological dredges, gill nets of various mesh sizes, fish traps, long-line gear, beach seines, and a midwater trawl. Skin divers will also be aboard the vessel. Evaluation of the marine fauna will be approached in a three-phase program. The first phase will entail a study of the bottom fish fauna which will cover an area from Bering Strait to 70° north latitude. During this phase approximately 50 stations will be sampled. The second phase will constitute an intensive study of the fish fauna in the immediate vicinity of the Cape Thompson or Ogotoruk Creek site proposed for the AEC excavation tests. During the last phase sampl-

ing of pelagic fish life will be carried out throughout most of the Chukchi Sea region. It is anticipated that more than 100 sites will be investigated during the 30 days in the Arctic.

Personnel chosen to accompany the John N. Cobb will include several Seattle scientists from the Bureau and the University of Washington College of Fisheries.

In carrying out the operations in the Chukchi Sea, the John N. Cobb's work will be closely integrated with studies being conducted by the University of Washington oceanographic vessel Brown Bear. The cruise patterns and objectives of both vessels have been designed so that maximum benefits can be derived from the Arctic studies. Both vessels will be in constant radio contact with each other and with the shore camp at Ogotoruk Creek.

The major difficulty anticipated in operating in the Chukchi Sea will be that of accurate navigation. Navigation in the area is made difficult by large and fluctuating deviations in the earth's magnetic field and by the absence of conventional electronic fixing techniques such as loran or shoran. The almost continuous summer daylight of the area and persistent fog will make celestial navigation almost impossible. Both vessels anticipate using radio direction-finders and radar to fix their positions.

Outdoor Recreation Resources

Review Commission

FIRST ADVISORY COUNCIL MEETING HELD: The Outdoor Recreation Resources Review Commission met in Washington on July 16 and 17 for the purpose of consulting with the Advisory Council. The Commission consists of 15 members, 4 each from the Senate and House Committees on Interior and Insular Affairs, and 7 appointed by the President, including Chairman Laurance Rockefeller. The Advisory Council consists of 25 representatives of various phases of natural resources, including commercial fisheries.

The 25 were selected out of a group of 500 considered by the Commission.

The commercial fishery representative (Charles E. Jackson, General Manager of the National Fisheries Institute), made a brief statement calling the Commission's attention to the vital importance of the food fisheries. He noted the fact that the United Nations is considering the breadth of the territorial-sea issue which might result in a change of the present 3-mile limit accepted by many of the nations of the world. He pointed out that whatever the decision it is highly important that the United States now consider means of improving and increasing its production of coastal inshore fisheries. He requested the Commission to give this matter serious study with a view of recommending a research program in inshore areas, looking toward an increased production of fish to meet not only domestic food needs but the increasing requirements of anglers. He said it was necessary to know more about the possibilities of fish farming in estuaries along the coasts.



Oysters

LONG ISLAND SOUND STUDIES: As in previous years, the U. S. Bureau of Commercial Fisheries Biological Laboratory at Milford, Conn., is conducting systematic observations on spawning and setting of oysters and starfish. The same locations as in the past will be used for the 10 major sampling stations. In addition, auxiliary stations, needed for other studies, will be established at the mouths of several rivers.

The Milford Laboratory will keep the members of the oyster industry and marine biologists informed as to the progress of the biological events occurring in Long Island Sound waters. These will deal principally with the intensity of setting of oysters and starfish in various areas and the survival and growth of these organisms. Other observations of interest will be included.

The bottom water temperature recorded on July 13 varied from 16.6° C.

(61.9° F.) at Station No. 3 at a 30-foot depth in the Bridgeport area to 21.8° C. (71.2° F.) in the shallow water of New Haven Harbor. Examination of gonads showed that some of the oysters have spawned, but no larvae have yet been found in the plankton samples. This, however, is not abnormal for Long Island Sound. For example, last year when one of the heaviest oyster sets in the history of the Connecticut shellfish industry occurred, larvae were not found in any of the 200-gallon plankton samples taken regularly at sampling stations until July 24, when a few young ones were recorded; yet, a heavy setting began only four days later. Thus, because of the peculiarities of the occurrence and distribution of larvae in Long Island Sound waters, many aspects of which are still not understood, predictions as to the time and intensity of setting cannot be made from observations on number and age of larvae.

No setting of oysters had occurred by July 13, and it is assumed that it will take place somewhat later than usual because of the relatively low water temperature.

Examination of collectors showed that setting of starfish began on July 2, occurring at most of the stations. The initial set was comparatively light, the maximum being nine starfish per 40 shells at Station 10. The bags collected on July 10 showed that setting continued, and that while no setting had taken place since July 6 at Stations 4 and 5, its intensity at Station 8 in the Bridgeport area considerably increased, the count being 28 starfish spat per 40 shells. The collectors examined on July 13 showed a general decrease in the intensity of the setting with Stations 3, 6, and 7 being free of any set, while only 2 spat were found on 40 shells brought from Station 10. (Observations on Spawning and Setting of Oysters and Starfish in Long Island Sound, Bulletin 1, July 17, 1959.)

RAFT-GROWN TYPE GROW FAST: Studies in Oyster River, Chatham, Mass., showed oysters grown on rafts grow faster and are healthier than those grown on bottoms. The oysters suspended below a

raft are expected to reach marketable size by the fall of 1959, when they will be two years old. If they had been bottom-grown instead of raft-grown, they would have required 4 or 5 years to reach that size. The mortality of raft-grown oysters was 17 percent in 1958 and over 90 percent in bottom-grown oysters. The studies are being conducted by the U. S. Bureau of Commercial Fisheries.

SETTING UNDER ARTIFICIAL CONDITIONS: In an artificial pond on Long Island, successful sets of American oysters were obtained by releasing ready-to-set larvae in the pond. Light sets of European oysters, *Ostrea edulis*, and Japanese clams, *Tapes semidecussata*, also were obtained in that pond.



Salmon

PROGRESS REPORT ON NORTH PACIFIC RESEARCH: Salmon studies in the offshore and inshore areas of the North Pacific Ocean by the U. S. Bureau of Commercial Fisheries Seattle, Wash., Biological Laboratory for the International North Pacific Fisheries Commission (formed by Canada, the United States, and Japan) have progressed steadily. Two chartered vessels completed 78 gill-net sets in the North Pacific and Bering Sea during the spring and the summer of 1958. The catch of 5,462 salmon included 1,190 reds or sockeye, 3,877 chums, 194 pinks, 175 silvers, and 26 kings. Compared with the catches in 1957, catches in 1958 reflect a marked decline in the abundance of pink salmon. Chum salmon were in comparable numbers both years.

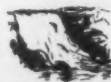
The widespread salmon sampling program throughout the North Pacific Ocean and adjoining seas and coastal areas featured increased sampling coverage off the Asian coastline. Red, chum, and pink salmon samples collected by the United States, Canada, and Japan for racial studies totaled 21,632 whole salmon and 2,319 salmon blood samples. Extensive catches are also being made during the current 1959 season.

The second season of experimental work on guiding seaward migrant fingerling salmon with electricity at the Lake Tapps, Green River, Wash., field site is in progress. Results show at least 90 percent of the yearling and two-year-old silver salmon moving through the area are diverted into bypass traps by the electrical barrier which is operating at an economic power consumption level. These findings also indicate the probability of future reductions in electrical and mechanical instrumentation and show that under certain circumstances electricity can be efficiently used to divert migrating fingerling salmon.

Surveys of the Yakima River system indicated the chinook salmon escapement in 1958 was slightly less than half that in 1957. The downstream migrant trapping project at Prosser resulted in counts of 145,000 chinook and silver salmon from April 1 to June 1, 1959. Surveys above Rocky Reach Dam indicated fish passed that dam through temporary fish passage facilities without noticeable bad effects.

In Alaska efforts are being made to predict the number of adult salmon which will return from the Pacific Ocean to the streams to spawn. Pink salmon fry in Southeastern Alaska and in Prince William Sound were dyed with neutral red stain, released, and trapped downstream. In the Bristol Bay area, the commercial catch was sampled for age composition, adult red salmon were enumerated from towers, and downstream migrating red salmon smolts enumerated with fyke nets.

Studies to determine the fresh-water survival of salmon in Alaska continued. At Little Port Walter a count was made of upstream migrating adult pink salmon and downstream migrating fry. Experiments with young pink salmon in the stream gravel were conducted to measure their survival rate. Research at Brooks Lake concerned the factors affecting the survival of red salmon in the Lake.



Shad

ATLANTIC COAST STUDIES: Observations on the Hudson River and the Connecticut River shad populations were continued in the spring of 1959 by biologists of the U. S. Bureau of Commercial Fisheries Beaufort, N. C., Biological Laboratory. The studies indicate that the Connecticut River population is approaching its 1941-1946 size when the best recorded catches were made. This increased population abundance resulted from an increased number of shad which were allowed to escape the fishery and spawn as a result of state regulations based on the recommendations of the Bureau's biologists. The fishway on the Connecticut River at the Hadley Falls Dam, Holyoke, Mass., passed some 15,000 shad during the 1959 shad run.

Research on managing the Atlantic coast shad resources centered on the St. Johns River, Fla., during the 1958-59 shad run. Through use of catch, effort, and tagging data a method was devised to determine the shad population in that river for each year in which such data are obtained.



Shrimp

STAINS USED TO MARK SHRIMP FOR MIGRATION STUDIES: Techniques for marking shrimp with vital stains which permit them to molt and retain the mark have been developed by the U. S. Bureau of Commercial Fisheries, Galveston, Tex., Biological Laboratory. Using this method, the Laboratory scientists stained juvenile pink shrimp in the protected bays of the Everglades National Park and recaptured them four months later in the Tortugas shrimp fishery. They had tripled their weight and traveled more than 100 miles. Stained brown shrimp recaptured in Galveston Bay had traveled up to 25 miles a week.

TEXAS VESSELS DISPUTE OVER WAGES SETTLED: A dispute which reportedly tied up approximately 90 percent of the 500 to 600 shrimp boats op-

erating between Brownsville and Port Isabel, Tex., was settled on July 10. The dispute affecting the \$15 million a year shrimp industry in that area reportedly stemmed from a wage cut for shrimp crews. The shrimp producers reportedly recently cut the money paid to shrimp crews by about 4 cents per pound per crew member.

The Texas producers had contended that producers elsewhere on the Gulf coast and in the East had been selling shrimp cheaper than the local vessels can produce them. Negotiations involving the fishermen and the producers were in progress for about 10 days.

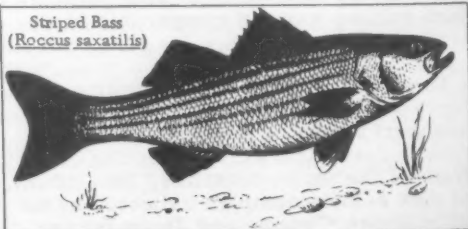
The Brownsville Shrimp Exchange, owners of 20 boats, reported that they had worked out a 60-40 arrangement with the crews. The boat owners will get 60 percent of the catch and the shrimp crews 40 percent. Other shrimp crews sought the same sort of agreement.

Reports indicate that some shrimp fishermen are interested in possible affiliation with AFL-CIO. Representatives of the AFL-CIO met with the executive committee of the Rio Grande Shrimpers Assoc., but no decision was reached.



Striped Bass

EAST COAST RESEARCH: Roanoke River Studies: Dams and pollution in the Roanoke River, Albemarle Sound, N. C., threaten sustained abundance of



the striped bass population. To resolve these problems, a cooperative study for developing this river basin by scientific means began in 1955. Research on the population and spawning status of striped bass in Roanoke River in relation to in-

dustrial development and water released from power dams upon the spawning grounds has been completed.

Potomac River Studies: In the spring of 1959, the U. S. Fish and Wildlife Service, Maryland, and Virginia concentrated research on the striped bass on Chesapeake Bay. They tagged 2,200 striped bass in the Potomac River as a part of the research planned to determine seasonal, annual and age-specific migrations, estimates of population size and mortality rates, size and age-class composition, and homogeneity of races.



Transportation

NEW RAILWAY EXPRESS AGENCY CONTRACT APPROVED BY RAILROADS:

The 178 railroads participating in the present Railway Express Agency contract have given their unanimous approval to a reorganization plan to be submitted to the Interstate Commerce Commission for approval. The most significant change is to give the Express Agency complete freedom to route ex-

press traffic without reference to a historical distribution pattern

which has been followed since 1920. This change is expected to result in improved service to shippers and improved financial conditions. Another important change is that future payments to the railroads will be based upon an average rate in each regional group "per car-foot mile of line-haul service rendered by each carrier." The present contract calls for distribution among the railroads of their pro rata share of revenue remaining after the Agency's expenses have been deducted. Future excess funds will be divided equally between the Agency and the carriers, thus providing the Agency with funds to re-invest in the business. The Agency's share of gross revenue on carload shipments will also be increased slightly.

Application will be made shortly for the Commission's approval of the new contract, which will be effective the first

of the month following the Commission's approval and will continue in force through December 1973. The New York Central announced that it will rescind its notice to withdraw from the Express Agency and will participate in the new plan, but the Chicago & Northwestern Railway said that it would withdraw from the Agency, sell its stock, but continue to make its facilities available to handle express shipments.

The Railway Express Agency has once more petitioned the Commission for special permission to publish a blanket increase on less-than-carload express rates of 25 cents per 100 lbs., minimum 25 cents per shipment, in all territories except within Mountain Pacific and Eastern territories, where the increase sought is 35 cents per 100 lbs., minimum 35 cents per shipment. This is equivalent to approximately a 6 percent increase and will not apply on accessorial charges. It is alleged that this increase is necessary to offset higher operating costs, including railroad retirement and unemployment insurance taxes.



United States Fishery Landings,

January-May 1959

Landings of fish and shellfish in the United States during the first five months of 1959 increased 17 percent as compared with the same period of the previous year.

Menhaden landings with a sharp rise of 124 million pounds accounted for most of the increase. Landings of those fish along the Atlantic Coast and in the Gulf States rose 70 million and 54 million pounds, respectively

On the Pacific Coast, landings of tuna were up 5 million pounds, while halibut, increased 3 million pounds as compared with the 1958 landings. In New England, haddock and ocean perch landings declined 9 million pounds each. Landings of whiting were down 3 million pounds. The yield of shrimp in the South Atlantic and Gulf States also dropped--only 35 million pounds were landed during the first five months of 1959 as compared with 43 million pounds for the same period in 1958.

Table 1 - United States Fishery Landings of Certain Species
For Periods Shown, 1959 and 1958 ^{1/}

Species	Period	1959	1958	Total 1958
..... (1,000 Lbs.).				
Anchovies, Calif. .	5 mos.	1,300	3,474	8,148
<u>Cod:</u>				
Maine	4 mos.	800	788	2,735
Boston	5 "	7,100	6,124	16,183
Gloucester	5 "	1,300	1,192	3,189
Total cod		9,200	8,104	22,107
<u>Haddock:</u>				
Maine	4 mos.	1,300	1,749	3,997
Boston	5 "	34,200	45,372	81,509
Gloucester	5 "	8,500	6,132	9,798
Total haddock		44,000	53,253	95,304
<u>Halibut 2/:</u>				
Wash. & Oreg. .	5 mos.	5,900	4,883	16,200
Alaska	5 "	6,100	4,431	19,814
Total halibut		12,000	9,314	36,014
Herring, Maine .	4 mos.	-	36	170,977
Industrial Fish, Me. and Mass. 3/	5 "	25,600	25,603	108,869
<u>Mackerel, Calif.:</u>				
Jack	5 "	8,800	5,906	21,698
Pacific	5 "	5,300	9,466	24,624
Menhaden	5 "	250,400	126,338	1,544,700
<u>Ocean perch:</u>				
Maine	4 mos.	19,700	21,146	71,068
Boston	5 "	1,600	1,085	2,825
Gloucester	5 "	16,500	24,977	74,951
Total ocean perch		37,800	47,208	148,644
Scallops, sea (meats)	5 mos.	6,100	5,513	15,253
<u>Shrimp (heads-on):</u>				
South Atl. & Gulf.	5 "	34,700	43,409	195,808
Oregon	4 "	854	213	1,550
Squid, Calif.	5 "	9,700	2,400	4,864
Tuna, Calif.	5 "	109,200	104,236	307,378
<u>Whiting:</u>				
Maine	4 mos.	-	1	23,577
Boston	5 "	39	49	596
Gloucester	5 "	2,500	5,640	58,927
Total whiting		2,539	5,690	83,100
Total all above items		557,493	450,163	2,789,038
Others (not listed)		201,307	198,358	1,926,962
Grand total		758,800	648,521	4,716,000
^{1/} Preliminary. ^{2/} Dressed weight. ^{3/} Excluding menhaden.				

Table 2 - United States Fishery Landings by States
for Periods Shown, 1959 and 1958 ^{1/}

Area	Period	1959	1958	Total 1958
..... (1,000 Lbs.).				
Maine	4 mos.	28,000	29,877	316,955
<u>Massachusetts 2/:</u>				
Boston	5 mos.	50,100	61,836	123,764
Gloucester	5 "	50,300	47,678	230,218
New Bedford	5 "	42,800	43,056	111,669
Provincetown	5 "	4,600	4,448	25,754
Total Mass.		147,800	157,018	491,405
Rhode Island 3/ ..	2 mos.	5,800	5,452	103,452
New York 3/	4 "	12,700	13,567	40,886
New Jersey 3/	5 "	23,900	20,660	49,813
North Carolina 3/ ..	5 "	28,100	28,580	54,866
South Carolina 3/ ..	5 "	3,000	3,581	15,358
Georgia	5 "	4,700	4,209	19,992
Florida 3/	4 "	46,000	51,650	153,832
Alabama	3 "	1,800	1,495	10,343
Mississippi 3/	4 "	2,500	3,001	84,988
Texas 3/	4 "	8,600	11,598	66,112
Ohio (Mar.-May) .	5 "	10,300	10,371	19,145
Oregon 2/	4 "	9,400	13,771	57,800
Washington 2/	3 "	20,100	23,655	166,000
<u>California:</u>				
Certain species 4/	5 mos.	134,300	125,482	581,200
Other	2 "	15,300	13,805	82,708
Total Calif.		149,600	139,287	663,908
<u>Rhode Island, Middle Atlantic, Chesapeake, South Atlantic, and Gulf States</u>				
(menhaden only) .	5 mos.	250,400	126,338	1,540,867
Alaska (halibut 5/)	5 "	6,100	4,431	19,814
Total all above items		758,800	648,521	3,875,536
Others not listed		6/	6/	840,464
Grand total		6/	6/	4,716,000
^{1/} Preliminary. ^{2/} Landed weight. ^{3/} Excluding menhaden. ^{4/} Includes catch of anchovies, jack and Pacific mackerel, tuna, and squid. ^{5/} Dressed weight. ^{6/} Data not available.				
Note: Data principally represent weight of fish and shellfish as landed except for mollusks which represent the weight of meats only.				



U. S. Foreign Trade

EDIBLE FISHERY PRODUCTS, MAY 1959: Imports of edible fresh, frozen, and processed fish and shellfish into the United States during May 1959 decreased by 8.3 percent in quantity and 0.4 percent in value as compared with April 1959. The decrease was due primarily to lower imports of groundfish fillets (down 3.0 million pounds) and frozen albacore and other tuna (down 6.8 million pounds), and to a lesser degree, a decrease in the imports of canned tuna in brine and canned salmon. The decrease was partly offset by a 2.1-million-pound increase in the imports of lobster and spiny lobster.

Item	Quantity			Value		
	May		Year	May		Year
	1959	1958		1958	1959	
	(Million of Lbs.)			(Millions of \$)		
Imports:						
Fish & shellfish:						
Fresh, frozen, & processed ^{1/} . . .	82.5	72.4	956.8	25.8	22.3	278.4
Exports:						
Fish & shellfish:						
Processed only ^{1/} (excluding fresh & frozen)	5.2	1.4	41.2	1.2	0.3	15.6
^{1/} Includes pastes, sauces, clam chowder and juice, and other specialties.						

Compared with May 1958, the imports in May this year were up by 13.9 percent in quantity and 15.7 percent in value due to higher imports of frozen tuna other than albacore (up 7.6 million pounds) and frozen shrimp (up 2.6 million pounds). Compensating, in part, for the increases was a drop of about 2.0 million pounds in the imports of fillets other than groundfish and canned salmon (down 1.1 million pounds).

United States exports of processed fish and shellfish in May 1959 were about unchanged in quantity, but were 9.1 percent higher in value as compared with April 1959. Compared with the same month in 1958, the exports this May were higher by 266.9 percent in quantity and 300.0 percent in value. The higher exports in May this year were due to increased exports of canned California sardines and canned salmon.

IMPORTS OF CANNED TUNA IN BRINE UNDER QUOTA AS OF JULY 4: The quantity of tuna canned in brine which may be imported into the United States during the calendar year 1959 at the 12½-percent rate of duty is 52,372,574 pounds. Any imports in excess of the quota will be dutiable at 25 percent ad valorem.

Imports for January 1-July 4, 1959, amounted to 21,992,914 pounds, according to data compiled by the Bureau of Customs. For January 1-July 5, 1958, a total of 20,407,245 pounds had been imported. The quota for 1958 of 44,693,874 pounds was reached on November 20, 1958.

GROUND FISH FILLET IMPORTS, JUNE 1959: Imports of groundfish (including ocean perch) fillets and blocks into the United States amounted to 9.3 million pounds--a drop of 1.2 million pounds (11 percent) as compared with the same month of 1958. As a supplier, Canada led all other countries with 5.8 million pounds--a decline of 2.5 million pounds as compared with the corresponding month of last year. Iceland was second with 1.4 million pounds--839,000 pounds greater than in June 1958. Denmark followed with 1.3 million pounds (up 121,000 pounds).

During the first six months of 1959, imports of cod, haddock, hake, pollock, cusk, and ocean perch fillets (including blocks) amounted to 83.9 million pounds. Compared with the first six months of 1958, this was an increase of 16.1 million pounds, or 24 percent. Canada (33.5 million pounds) supplied 40 percent of the six months total. Imports from Iceland (27.8 million pounds) made up 33 percent of the total, while Denmark (10.4 million pounds) and Norway (8.6 million pounds) supplied 12 and 10 percent, respectively. The remaining 5 percent was supplied by West Germany, Miquelon and St. Pierre, the Netherlands, Greenland, the United Kingdom, Ireland, and Japan.

Note: See Chart 7 of this issue.



U. S. Production of Fish Sticks and Portions, April-June 1959

The United States production of fish sticks in the second quarter of 1959 was 14.1 million pounds and fish portions 8.3 million pounds. This was an increase of 283,000 pounds, or 2 percent for fish sticks and 3.1 million pounds, or 59 percent, for portions as compared with the same quarter of last year.

Table 1 - U. S. Production of Fish Sticks by Months, April-June 1959 ^{1/}			
Month	Cooked	Raw	Total
	(1,000 Lbs.)		
April	4,591	362	4,953
May	4,308	313	4,621
June	4,222	273	4,495
Total 2nd quarter 1959	13,121	948	14,069
Total 2nd quarter 1958	12,288	1,498	13,786
Total first 6 months 1959	29,246	2,555	32,401
Total first 6 months 1958	27,911	2,797	30,708
^{1/} Preliminary.			

Table 2 - U. S. Production of Fish Sticks by Areas, April-June 1958 and 1959				
Area	1959 ^{1/}		1958 ^{2/}	
	No. of Firms	1,000 Lbs.	No. of Firms	1,000 Lbs.
Atlantic Coast States	22	12,185	22	11,452
Interior and Gulf States	5	994	3	1,173
Pacific Coast States	9	890	11	1,161
Total	36	14,069	36	13,786
^{1/} Preliminary.				
^{2/} Revised.				

with the same period of 1958, this was an increase of 61 percent in breaded portions and 36 percent in unbreaded portions.

The Atlantic Coast was the principal area for the production of fish sticks with 12.2 million pounds, while the inland, Gulf, and Pacific Coast States led in the production of fish portions.

During the first six months of 1959, a total of 32.4 million pounds of fish sticks was produced--an increase of 6 percent as compared with the corresponding period of 1958. Fish portions (17.2 million pounds) were 73 percent greater than in the same six-months period of last year.

Table 3 - U. S. Production of Fish Sticks, by Months, 1955-1959					
Month	1959 ^{1/}	1958 ^{2/}	1957	1956	1955
	(1,000 Lbs.)				
January	6,316	5,471	4,261	4,862	5,345
February	6,394	5,925	5,246	5,323	5,794
March	5,622	5,526	5,147	6,082	7,205
April	4,953	4,855	4,492	3,771	5,953
May	4,621	4,229	3,380	3,873	4,879
June	4,495	4,702	3,522	3,580	5,392
July	-	4,574	3,821	3,153	4,340
August	-	4,358	4,643	4,166	4,520
September	-	5,328	4,861	4,085	4,535
October	-	5,485	5,162	5,063	5,261
November	-	5,091	4,579	4,585	4,946
December	-	5,359	4,014	4,019	4,876
Total	-	60,903	53,128	52,562	63,046
^{1/} Preliminary.					
^{2/} Revised.					

Table 4 - U. S. Production of Fish Portions by Months and Type, April-June 1959 ^{1/}					
Month	Breaded			Unbreaded	Total
	Cooked	Raw	Total		
	(1,000 Lbs.)				
April	398	1,993	2,391	217	2,508
May	228	2,098	2,326	257	2,583
June	323	2,583	2,906	231	3,137
Total 2nd quarter 1959	949	6,674	7,623	705	8,328
Total 2nd quarter 1958	800	3,933	4,733	517	5,250
Total first 6 months 1959	2,631	13,190	15,821	1,371	17,192
Total first 6 months 1958	1,718	7,245	8,963	985	9,948
^{1/} Preliminary.					

Cooked fish sticks (13.1 million pounds) made up 93 percent of the fish-stick production. The remaining 7 percent (948,000 pounds) consisted of raw fish sticks. A total of 7.6 million pounds of breaded fish portions (of which 6.7 million pounds were raw) and 0.7 million pounds of unbreaded portions were processed during the second quarter of 1959. Compared

Table 5 - U. S. Production of Fish Portions by Areas, April-June 1958 and 1959				
Area	1959 ^{1/}		1958	
	No. of Firms	1,000 Lbs.	No. of Firms	1,000 Lbs.
Atlantic Coast States	21	3,808	18	3,028
Inland, Gulf, and Pacific Coast States	11	4,520	7	2,222
Total	32	8,328	25	5,250
^{1/} Preliminary.				

Table 6 - U. S. Production of Fish Portions by Months, 1958-1959

Month	1959 ^{1/}	1958
January	2,665	1,973
February	2,996	1,254
March	3,203	1,471
April	2,608	2,268
May	2,583	1,478
June	3,137	1,504
July	-	2,161
August	-	1,516
September	-	1,566
October	-	2,560
November	-	1,979
December	-	2,060
Total	-	21,790

^{1/}Preliminary.

Vessels

MARKET FOR UNITED STATES-BUILT FISHING VESSELS IN MEXICO AND PERU POOR: The market for United States-built fishing vessels in Mexico and Peru (the expansion of the fisheries in both countries has been rapid in recent years) is practically nonexistent. Prior to mid-1958 there was

Mexico: The largest group of wooden shrimp vessels purchased in the United States the spring and early summer of 1958 were 58 feet in length and cost about US\$33,000 each, plus an additional cost of \$2,400 for delivery to Salina Cruz. Comparable vessels built in Mexico now cost between \$34,000-\$36,000, however, the price of Mexican-built shrimp vessels is rising.

The tendency in Mexico is towards steel rather than wooden shrimp vessels. The principal reason for this is that Mexican lumber is not kiln-dried and imported lumber, unless in a free port, is expensive. One owner, who is having two 56-foot wooden vessels constructed in a free port from imported United States pine lumber, estimates that his cost for fully-equipped double-rig boats (with the exception of sonic depth finders) will be about \$32,000. The boats will have 120 hp. Diesel engines and the electric plant will be gasoline-powered.

The chief reasons given for purchasing shrimp vessels in the United States were:

(1) The reliability and rapidity of delivery dates of United States as compared to Mexican shipyards. United States de-

Table 1 - Costs and Details of Construction of Steel Shrimp Trawlers in Mexico

Item	Company A	Company A	Company B	Company C	Company C
Cost to Buyer	\$38,800	\$40,800	\$45,200	\$40,000	\$44,000
Length	58'	62'	65'	55'10"	60'
Beam	16'	17'6"	18'6"	NS.	NS.
Fuel capacity	3,435 gals.	4,490 gals.	5,547 gals.	NS.	NS.
Oil capacity	53 gals.	53 gals.	66 gals.	NS.	NS.
Fresh water capacity	792 gals.	925 gals.	1,320 gals.	NS.	NS.
Hold capacity ^{1/}	21 M.T.	30 M.T.	22-24 M.T.	NS.	NS.
Motor	150 hp.	182 hp.	182 hp.	100 hp.	10 hp.
Delivery time	NS.	NS.	7 mos.	NS.	NS.
Penalty clause	None	None	620 daily	NS.	NS.

^{1/}Capacity in terms of crushed ice.
NS--Not specified.

a good market for United States-built shrimp trawlers in Mexico, but at present, due to vessel-building subsidies and a protective policy for Mexican shipyards, this market came to an end in the last half of 1958. Peru is also capable of building vessels to add to or replace its present fleet.

livery dates were from 3-4 months whereas the Mexican deliveries at the time those orders were placed, were about one year away and the Mexican purchasers wanted their vessels as soon as possible.

(2) Of less importance was the fact that better lumber could be secured in the United States.

Prices on steel vessels built in Mexico vary somewhat between companies, and the type of motor also causes variation in price. The customary practice is to quote prices of vessels equipped with motor, mast, booms, winch, light plant, radiotelephone, and sonic depth finder (see table).

The vessels of Company C, whose prices run higher than the others, are equipped with Diesel electric plants whereas the other shipyards furnish gasoline-powered motors. This company claims that it is the only one in Mexico that meets the requirements for the highest class set by the American Bureau of Shipping and for this reason vessels from this yard are more costly, but they pay smaller insurance premiums.

One company prefers about 30 percent payment on signing of the contract and within 15 days of this date the purchaser is required to establish sufficient credit to provide for the purchase of the motor, transmission, power take-off, radiotelephone, sonic depth-finder, winch, and whatever other equipment may be specified in the contract. Within 60 days of signing, providing the vessel is ready for sheathing, about 10 percent of the purchase price is to be paid. Within 90 days about another 10 percent, provided the hull is completely sheathed; within 120 days, about another 10 percent, provided the hull is in the water; and on delivery, the remainder which also amounts to about 10 percent of the sales price.

Another shipyard prefers a down payment of about 20 percent; another payment within 30 days to cover the cost of the motor; a payment of about 20 percent when the hull is ready for sheathing; 20 percent when the hull is sheathed and the remainder, which usually runs around 15 percent, when the hull is completed.

There have been no recent purchases of shrimp vessels in the United States due to a decree issued in March of 1958 which makes it difficult to obtain vessels from the United States.

In addition to the above decree the Mexican Government recently granted local shipyards certain subsidies for

boats falling within the size range of the usual shrimp boat.

The most recent purchase of vessels, other than shrimp trawlers, was that of two used menhaden seiners for a fish-meal plant, now under construction at Ciudad del Carmen, Campeche. So far as can be determined in recent months, no new fishing vessels have been purchased in the United States for use in Mexico.

Peru: Peruvian fishing-boat construction has been booming owing to increased interest in fish-meal production. Most of the vessels under construction are about 50 feet in length and are equipped for fishing with purse seines for anchovies. It is understood that the sizes of boats being built in Peru are increasing. One source recently reported a 90-foot fishing boat under construction.

No information is available as to any recent Peruvian purchases of fishing vessels from the United States. It is believed that very few, if any, new fishing vessels have been purchased recently in the United States for use in Peru. Peru is constructing practically all, if not all, of her own fishing vessels.



Virginia

BIOLOGISTS EXPERIMENT WITH MESH SIZE OF CRAB POTS: The shellfish biologists of the Virginia Fisheries Laboratory, Gloucester Point, are trying to find a crab pot that will catch only 5-inch wide legal-size blue crabs, and will allow smaller crabs to escape. The biologists have constructed dozens of pots from wire of different mesh openings, and are comparing the catches of the pots.

The pot that has been most efficient will catch the same number of legal crabs as the pot now used by Virginia's crab fishermen, but catches only one-half as many under-size crabs.

The Virginia biologists are also tagging hundreds of blue crabs in the York River to learn the direction and speed of

movement of crabs, and to obtain estimates of the amount of the commercial fishing effort.



Whaling

PACIFIC COAST WHALING SEASON OPEN: The 1959 season for United States whaling began May 1. For six months after that date, in accordance with regulations issued by the U. S. Department of the Interior, the taking of baleen whales is permitted from licensed land stations; sperm whales may be taken during eight months beginning April 1.

As in 1958, the only United States whaling companies licensed are two California companies which take whales just outside San Francisco. These companies use a total of five catcher vessels. Two secondary stations assist in the preparation of products. The 261 whales taken in 1958 produced meat, oil, and meal valued at nearly one million dollars.



Wholesale Prices, July 1959

There was practically no change in wholesale prices of fishery products from June to July. But prices this July were substantially lower than in 1958 principally because of a sharp drop in shrimp prices. The July 1959 edible fish and shellfish (fresh, frozen, and canned) wholesale price index was down 0.4 percent from June and lower by 6.2 percent from the same month in 1958.

Because of the continuing shortage of large haddock and very light supplies of certain fresh-water fish (yellow pike and Lake Superior whitefish), the price index this July for the drawn, dressed, and whole finfish subgroup was up 6.3 percent from June. Price declines from June to July of 1.5 percent for fresh western halibut, 2.6 percent for large and medium king salmon, and 9.3 percent for round Great Lakes whitefish at New York City failed to offset the higher prices for the other items in the subgroup. The wholesale price index for the subgroup this July as compared with July a year ago was higher by 6.1 percent due to higher prices for all the subgroup items except fresh West Coast halibut prices which dropped 16.3 percent.

The fresh processed fish and shellfish subgroup wholesale price index dropped about 10 percent from June to July this year. Although fresh haddock fillets at Boston were up by 7.9 percent and shucked oysters up 2.2 percent, a 21.9-percent drop in fresh shrimp prices at New York City from June to July more than offset the increases. About the same situation accounted for the 17.7 percent decline in wholesale prices for this subgroup from July a year ago to this July. Fresh shrimp prices in July this year were down 33 percent when compared with the same month in 1958.



Box of iced carp on Fulton Market, Chicago, Ill.

From June to July this year, a decrease of 2 cents a pound in the average price of 26-30 count frozen white and brown shrimp at Chicago was responsible for the 1.2 percent decline in the frozen processed fish and shellfish subgroup index. Wholesale prices for frozen fillets were unchanged during this period. The drop (11.3 percent) in the wholesale price index from July of last year to this July was even more pronounced due mostly to a sharp drop of 19.4 percent in frozen shrimp prices. Average white and brown wholesale frozen shrimp prices (26-30 count) in mid-July this year were down 17 cents a pound from the price of 94 cents a pound reported in July 1958, but last year shrimp supplies and stocks were comparatively light.

The canned fish wholesale price index in July 1959 was fractionally higher when compared with the preceding month due only to an increase of 3 cents a case for the New York City delivered price of Maine sardines. This increase was due to higher transportation charges from the Maine cannery plants to New York City. But the canned fish index this July was lower by 4.0 percent from July a year ago. Canned tuna prices dropped 7.3 percent and canned California sardine prices dropped 35.2 percent from July 1958 to July 1959 because of liberal stocks. These declines were partially offset by higher canned salmon and canned Maine sardine prices. At the end of July this year most of California bait boat tuna fleet was still tied-up in port due to a dispute over ex-vessel prices. The Maine sardine pack in July picked up sharply from June when packing for this season actually started, but the two-months pack total was still below the pack as of July 31, 1958. Stocks of California sardines on hand were all from the August 1-December 31, 1958, packing season. California sardines in tomato sauce are almost sold out, but there is still a good supply of sardines packed natural. Although the sardine fishing season officially opened in Central California on August 1, the 1959 California sardine packing season was unlikely to start because of the lack of agreement between the fishermen and the cannery on the ex-vessel price for sardines. The canned salmon pack as of the end of July 1959 was considerably less than last year and indications point to a very light supply for the 1959/60 marketing season.

Table 1 - Wholesale Average Prices and Indexes for Edible Fish and Shellfish, July 1959 with Comparisons

Group, Subgroup, and Item Specification	Point of Pricing	Unit	Avg. Prices ^{1/} (\$)		Indexes (1947-49=100)			
			July 1959	June 1959	July 1959	June 1959	May 1959	July 1958
ALL FISH & SHELLFISH (Fresh, Frozen, & Canned)					123.0	123.5	121.7	131.2
<u>Fresh & Frozen Fishery Products:</u>					139.0	139.9	138.1	150.0
<u>Drawn, Dressed, or Whole Finfish:</u>					160.2	147.9	145.5	151.0
Haddock, lge., offshore, drawn, fresh	Boston	lb.	.17	.11	169.5	109.1	97.0	131.6
Halibut, West., 20/80 lbs., drsd., fresh or froz.	New York	lb.	.34	.34	103.6	105.2	107.0	123.8
Salmon, king, lge. & med., drsd., fresh or froz.	New York	lb.	.76	.78	171.3	175.8	174.1	169.1
Whitefish, L. Superior, drawn, fresh	Chicago	lb.	.61	.57	151.2	140.1	192.1	132.6
Whitefish, L. Erie pound or gill net, rnd., fresh	New York	lb.	.79	.88	159.8	177.0	192.1	126.4
Yellow pike, L. Michigan & Huron, rnd., fresh	New York	lb.	.81	.68	190.0	158.3	140.7	164.1
<u>Processed, Fresh (Fish & Shellfish):</u>					123.0	136.7	136.4	149.4
Fillets, haddock, sml., skins on, 20-lb. tins	Boston	lb.	.41	.38	139.5	129.3	117.4	134.4
Shrimp, lge. (26-30 count), headless, fresh	New York	lb.	.66	.85	104.3	133.5	136.7	156.4
Oysters, shucked, standards	Norfolk	gal.	5.88	5.75	145.4	142.3	139.2	142.3
<u>Processed, Frozen (Fish & Shellfish):</u>					120.9	122.4	119.8	136.3
Fillets: Flounder, skinless, 1-lb. pkg.	Boston	lb.	.39	.39	102.1	102.1	100.8	103.4
Haddock, sml., skins on, 1-lb. pkg.	Boston	lb.	.34	.34	105.2	105.2	103.6	105.2
Ocean perch, skins on, 1-lb. pkg.	Boston	lb.	.28	.28	112.8	112.8	112.8	114.8
Shrimp, lge. (26-30 count), 5-lb. pkg.	Chicago	lb.	.77	.79	118.4	121.1	117.6	145.1
<u>Canned Fishery Products:</u>					100.5	100.4	98.6	104.6
Salmon, pink, No. 1 tall (16 oz.), 48 cans/cs.	Seattle	cs.	23.50	23.50	122.6	122.6	117.4	120.0
Tuna, lt. meat, chunk, No. 1/2 tuna (6-1/2 oz.), 48 cans/cs.	Los Angeles	cs.	10.80	10.80	77.9	77.9	77.9	84.0
Sardines, Calif., tom. pack, No. 1 oval (15 oz.), 48 cans/cs.	Los Angeles	cs.	7.25	7.15	85.1	83.9	83.9	131.3
Sardines, Maine, keyless oil, No. 1/4 drawn (3-3/4 oz.), 100 cans/cs.	New York	cs.	8.25	8.22	87.8	87.5	88.8	82.2

^{1/} Represent average prices for one day (Monday or Tuesday) during the week in which the 15th of the month occurs. These prices are published as indicators of movement and not necessarily absolute level. Daily Market News Service "Fishery Products Reports" should be referred to for actual prices.



KILLING WHALES WITH CARBON DIOXIDE SHELLS

A new Norwegian invention for hunting whales using carbon dioxide (CO₂) will be tried out in practice in whale hunting off Iceland. The new idea, experimented with by a Norwegian engineer, is that when the harpoon hits the whale the shell releases 2.5 m³ (88 cu.ft.) of CO₂, which spreads through the whale's body and kills it in 2 seconds. It then causes the whale to float to the surface without air having to be pumped into it (Food Manufacture, September 1957).



International

FISHERIES TRADE FAIR

TO BE HELD IN COPENHAGEN,
SEPTEMBER 25-OCTOBER 4, 1959:

The 3rd International Fisheries Trade Fair, scheduled to take place in Copenhagen, Denmark, between September 25 and October 4, 1959, will be on a larger scale than its two predecessors (in 1956 and 1957), according to the sponsoring organization, Universal Fair and Exhibition Service.

The fair is to take place in the Forum exhibition hall, where 90 percent of the available floor space has already been booked. Exhibitors from 16 countries will participate.

On display will be all kinds of equipment used in the fishing and fish processing industries. New inventions and techniques developed since the 1957 Fair will be prominently featured. Particular attention will be given to fishing vessels, and several boat yards will be represented, showing the most recent developments within this field, especially with regard to steel cutters.

The sponsors expect that the number of visitors to this year's Fair will exceed that of the 1957 Fair, reported to have been about 60,000.

FOOD AND AGRICULTURE ORGANIZATION

FISHERY COOPERATIVES MEETING HELD AT NAPLES, ITALY:

The first Technical Meeting on Fishery Cooperatives, convened jointly by the Food and Agriculture Organization (FAO), Rome, Italy, and the International Labor Organization (ILO), was officially opened at Naples on May 12 by the Italian

Minister of the Merchant Marine. The Secretary-General of the Italian Cooperative Confederation (CCI) was elected chairman of the Meeting.

In his opening speech, the Italian Minister said that fishermen must organize themselves into cooperatives in order to increase their technical and financial means, must adopt new systems to harvest the biological resources of the sea, and must rationalize their activities, reduce costs, and increase their competitive position in the fish market.



"This Conference should make clear the moral, technical, economic, and social advantages of fishery cooperatives," he said.

The Director of FAO's Fisheries Division said it was the first international meeting of the kind, and "though most of you have clearly similar interests in the development of fishermen's cooperatives, few amongst you have ever acted before.

"In planning our work," he said, "we should bear in mind also that the result of our discussions will be of interest not only to ourselves, but particularly to many of our friends in less-developed countries who are confronted with the urgent problems of developing their fisheries."

The chairman said that, particularly in the field of fisheries, the only possible solution to problems confronting producers and consumers is the establishment of cooperatives.

"I hope that governments will increase their support to the cooperatives without

International (Contd.):

endangering their autonomy and independence," he concluded.

The ILO representative said that ILO and FAO are concerned both with problems of fishermen and questions concerning cooperatives.

"The important thing, however, is that a start will have been made, and since the cooperative movement is not a static edifice but a living organism, the question which we shall be discussing will almost certainly prove to be of perennial interest."

Seventy-five delegates from 18 countries and observers from several international organizations attended the nine-day meeting. A number of study tours were on the agenda, as well as visits to Cooperative Societies concerned with marine fishing and shellfish cultivation, situated in the Gulf of Naples. Countries and organizations represented: Belgium, Canada, France, Western Germany, Greece, Italy, Japan, the Netherlands, Norway, Poland, Spain, Sweden, Switzerland, Turkey, the United Kingdom, the United States of America, Viet-Nam, Yugoslavia; ICA, International Federation of Agricultural Producers, the Indo-Pacific Fisheries Council, the General Fisheries Council for the Mediterranean.

INTERNATIONAL LABOR ORGANIZATION

COMMERCIAL FISHERMEN
LABOR INSTRUMENTS
ADOPTED BY CONFERENCE:

The International Labor Organization at its 43rd conference in Geneva, on June 26 adopted three instruments pertaining to commercial fishermen. By a majority vote the Conference adopted the following: (1) the minimum age for admission of fishermen to employment to be 15 years; (2) medical examinations for fishermen--annually for those under 21 years of age and periodically for those over 21 years; and (3) articles of agreement are to be required between fishermen and vessel owners.

The United States delegation included George C. Lodge, Assistant Secretary of

Labor, Cola G. Parker, Chairman of the Finance Committee, National Association of Manufacturers as employer's delegate, and Rudolph Faupl, International Representative, International Association of Machinists, as worker's delegate. Advisor on fisheries to Faupl was George Johansen, Secretary-Treasurer, Alaska Fishermen's Union, and fishery advisor to Parker was Charles E. Jackson, General Manager, National Fisheries Institute.

Note: Also see Commercial Fisheries Review, November 1959, p. 61.

INTERNATIONAL
OCEANOGRAPHIC CONGRESSMEETS IN NEW YORK
AUGUST 30 TO SEPTEMBER 12:

The International Oceanographic Congress meeting was held from August 30 to September 12, 1959, at the United Nations Building in New York.

The purpose of the Congress was to provide a common meeting ground for all sciences concerned with the oceans and the organisms contained in them. It was devoted to the fundamentals of the marine sciences rather than to their applications.

The Congress was centered around five symposia on the oceans--the history, the boundaries, the deep sea, dynamics of organic and inorganic substances, and the marine life regime. Each topic was considered for two consecutive days with three lectures each morning. The afternoon sessions were organized around the topics of the morning lectures, either as roundtable discussions, seminars, or a series of papers.

INTERNATIONAL PACIFIC
HALIBUT COMMISSION

FIRST SEASON IN AREAS 2 AND 1B CLOSED:

The International Pacific Halibut Commission announced the closure of the first season in Areas 2 and 1B to halibut fishing effective at 6 a.m. (P.S.T.) July 8, 1959, until the beginning of the second fishing season in these areas. The Commission estimated that the 26.5-million-pound limit set for Area 2 would have been caught by that date. Area 1B, which has no catch limit, was also closed when the quota for Area 2 was attained. The Commission announced the closure on June 29, 1959.

The official opening date for all halibut fishing in the North Pacific regulatory area this year was May 1 at 6:00 a.m. (P.S.T.), except that fishing in Area 3B commenced on April 1, 1959.

International

Areas 2 and 1B this year were open to halibut fishing for 68 days as compared with 59 days in 1958 and 47 days in 1957. These same areas were fished for 38 days in 1956 (fishing started May 20), 24 days in 1955, 21 days in 1954, and 24 days in 1953.

The longer period required to catch the Area 2 catch limit this season is attributed to (1) lighter catches and fewer vessels fishing Area 2, and (2) the continuation of the 8-day lay-over between trips initiated in 1956.

The second fishing season in Areas 2 and 1B is scheduled to commence at 6:00 a.m. (P.S.T.)



A trip of dressed halibut on ice prior to freezing at Ketchikan, Alaska.

August 22, for a period of 7 days without a catch limit, except that in Area 2 the Cape Scott and Goose Islands grounds in Queen Charlotte Sound and the inside waters of southeastern Alaska shall be closed to halibut fishing during the second season. Thereafter, Areas 2 and 1B are closed to halibut fishing until the commencement of the halibut fishing season in 1960.

* * * * *

FISHING IN AREA 3A ENDED AUGUST 1, 1959:

The end of fishing in Pacific halibut Area 3A took place at 6 a.m. (P. S. T.) on August 1, 1959. The International Pacific Halibut Commission made the announcement on July 13, 1959, since it estimated that by August 1 the catch limit of 30 million pounds for Area 3A would have been reached. The area 3A closure this year is 30 days sooner than in 1958 when fishing ended on August 31. In 1957 fishing in Area 3A stopped on September 22.

The Commission at the same time it announced the closure of Area 3A also announced that halibut fishing in Areas 1A and 3B will end at 6:00 a.m. (P. S. T.) on October 16. Because the Area 3A fishing season ended so early this year, it is believed that more than the usual number of halibut vessels will fish the Bering Sea or Area 3B this fall.

After the end of fishing in Areas 1A and 3B, those Pacific halibut areas will be closed to fishing until the reopening in 1960.

Area 1A includes the waters south of Heceta Head, Oregon; Area 3A, the waters off the coast of Alaska between Cape Spencer and the Shumagin Islands; Area 3B, the waters west of Shumagin Islands and in the Bering

Sea; Area 2, the waters between Willapa Bay and Cape Spencer, Alaska; Area 1B, the waters between Willapa Bay and Heceta Head.

This year Area 3A was open to fishing for 92 days--27 days less than the 119 days in 1958. In 1957 the area was open to fishing for 144 days (the longest season for the area since 1945 when the area was open to fishing for 147 days). Between 1945 and 1955 the trend had been towards a shorter season, but then the trend reversed itself and through 1957 the seasons were longer. However, beginning in 1958 the trend was reversed again and the seasons have become shorter. Area 3A was open for halibut fishing for 104 days in 1956, 81 days in 1955, 58 days in 1954, 52 days (shorter on record) in 1953, 60 days in 1952, 56 days in 1951, 66 days in 1950, 73 days in 1949, and 72 days in 1948.

Under authority of the Convention between Canada and the United States of America for the Preservation of the Halibut Fishery of the Northern Pacific Ocean and Bering Sea, this year's regulations became effective March 31, 1959.

TRADE AGREEMENTS

SWEDISH-NORWEGIAN TRADE AGREEMENT FOR 1959 INCLUDES FISHERY PRODUCTS:

The Swedish-Norwegian annual trade protocol for the calendar year 1959 was signed in Stockholm on March 21. Under the Protocol, right has been reserved to convene discussions in the event the internal measures taken by the two contracting parties tend noticeably to obstruct mutual trade in fish and fish products.

In an exchange of letters, the Norwegians suggested the abolition of Swedish import restrictions on salted fat herring; found in Sweden's method of determining its fish demand to be unfavorable; pointed out the obstructive effect of a 45-ore (US\$0.09) Swedish import fee, per kilogram (2.2 lbs.), on Norwegian exports of fresh and frozen filleted fish; and recommended removal of these restrictions. The Norwegians further pointed out that the new Swedish Customs Tariff, effective January 1, 1959, entailed considerable increases in import duties on certain items. The Swedes, on their part, called attention to a marked decline in their mackerel exports to Norway after the imports of this fish had been made subject to import license requirements beginning June 10, 1958. Delegates agreed to refer the respective points to their Governments.

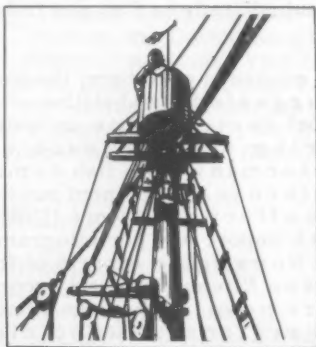
International (Contd.):

The list of Swedish exports to Norway attached to the Protocol did not include any fishery products. Among the items listed by value and quantity for export to Sweden from Norway were lobsters. Fresh fish and herring, frozen and filleted fish, marine oils and fatty acids, and fish meal, and miscellaneous items are subject to supply and demand. A special item in the Norwegian list is salted, sugared-and-salted, and spiced herring for which Swedish import licenses will be granted within the scope of an over-all nominal annual quota of 14,500 metric tons which may be drawn from Norway, Denmark, Faeroe Islands, Iceland, the Netherlands, and the United Kingdom.

WHALING

QUOTA APPORTIONMENT TALKS
END WITHOUT AGREEMENT:

No agreement was reached on the apportionment of the pelagic (deep-sea) whale quota for 1960 Antarctic whaling



at talks held in Tokyo early in June. The countries involved are Japan, Netherlands, Norway, Russia, and the United Kingdom.

The Managing Director of the Netherlands Whaling Company, after returning from the Tokyo Whaling Conference, mentioned that the Dutch are now prepared to keep the Bloemendaal, a tanker, out of Dutch whaling operations. But they would insist on a minimum quota of 1,200 blue-whale units or 8 percent of the total catch quota. (In the past the Dutch have

caught about 4.6 percent of the total quota.) He also mentioned that the sale of the whaling factoryship Willem Barendsz has been put off for the time being. The Dutch representative indicated that Norway is prepared to decrease its allocation of whale units somewhat.

The Managing Director also pointed out that the Dutch have proposed raising the whale catch limit of 15,000 blue-whale units to 16,000 or 16,500. This proposal was based on scientific research conducted by an Amsterdam professor who found that such an increase is justified while at the same time conserving the whale supply. The Dutch Managing Director is agreeable to the proposals of all of the whaling countries with the exception of the article limiting each country to a certain percentage of the 15,000 whale units.

Because of failure to agree on the allocation of the quota between the five countries involved at the end of 1958, Japan, Holland, and Norway announced their conditional withdrawal from the International Whaling Convention. Withdrawals were scheduled to become effective by June 30, 1959, unless agreement was reached in London at the meeting of the Whaling Commission on June 22-27. (United States Consulate, Amsterdam, report of June 5.)

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ELEVENTH ANNUAL
MEETING OF INTERNATIONAL
WHALING COMMISSION:

The Eleventh Meeting of the International Whaling Commission was held in London, June 22-31, 1959. The Contracting Governments represented at the meeting were Australia, Canada, Denmark, France, Iceland, Japan, Mexico, the Netherlands, New Zealand, Norway, South Africa, Sweden, U.S.S.R., the United Kingdom, and the United States. In addition, there were observers from the Food and Agriculture Organization of the United Nations, the International Council for the Exploration of the Sea, Argentina, and Portugal.

In welcoming the Commission, the British Minister of Agriculture, Fisheries, and Food stressed the importance

International (Contd.):

of the whaling industry, and particularly of Antarctic whaling, to the world economy. Great efforts in aid of conservation had been made since the Commission began its work, and although there were many difficulties to be met none denied that control was essential.

Throughout its proceedings the Commission was aware that the five Antarctic pelagic whaling countries (Japan, the Netherlands, Norway, U.S.S.R., and the United Kingdom) had been continuing separate talks with a view to limiting the numbers of their fleets and allocating the total permitted Antarctic catch between them. The Commission has the power to protect particular species, to declare open and closed seasons and areas, prescribe minimum size-limits for each species caught, to determine the time, methods, and intensity of whaling (including the maximum catch of whales to be taken in any one season), but is not able to allocate catch quotas to the different countries or restrict the number of pelagic expeditions.

In recent years the view has been widely held that the total number of whale factoryships and catchers had become too large and expensive to make economic catches within the ceiling authorized by the Commission as the limit which the Antarctic stocks of whales could support. Without some agreement which would enable the Antarctic whaling countries to conduct their operations in a more rational and economic manner, it was considered impossible for the fleets of some countries to operate profitably.

Three of the Antarctic pelagic whaling countries (Japan, the Netherlands, and Norway) had given notice of withdrawal from the Convention to take effect from June 30, 1959. The Commission was informed that the Antarctic pelagic whaling countries had been unable to reach a generally-acceptable agreement on the allocation of the authorized catch. The Commission expressed concern at the effect upon the whale stocks if the Convention was not adhered to and urged that all countries should remain party to the Convention while making further efforts to reach agreement. However, the Netherlands

and Norway informed the Commission on June 30 that their notices would become effective. Nevertheless, both those countries undertook to continue to abide by all the Commission's regulations excepting the catch limit and, in the case of the Netherlands, the length of the whaling season. The Japanese Government decided to rescind its notice of withdrawal.

The main aims of the Convention are given effect in a document attached to it known as the Schedule and during their proceedings the Commission took several decisions affecting the Schedule.

The first of these concerned the maximum permissible catch of whales for the Antarctic season 1959/60 and here it was agreed that there should be no change and that the figure should remain at 15,000 blue-whale units. (A blue-whale unit is 1 blue whale, or 2 fin whales, or $2\frac{1}{2}$ humpback whales, or 6 sei whales.)

An area of the southern hemisphere south of latitude 40° S. and between meridians 70° W. and 160° W., formerly a sanctuary for baleen whales but which had been open for whaling for the last four years, was declared open for another three years.

The Antarctic season for catching fin and sei whales was formerly from January 7 to April 7, but the Commission considered it desirable to advance the commencement of season 1959/60 to December 28, 1959.

The season for the taking of humpback whales in the Antarctic was changed from February 1-4 to four days commencing January 20.

The blue-whale stocks in the North Atlantic are considered to be too low for exploitation at present and this species has been scheduled for complete protection since 1954. Consideration of the condition of the blue-whale stock resulted in a recommendation that this protection should be continued for five years ending on February 26, 1965.

At the present time enforcement of the terms of the Convention on factoryships in the Antarctic is based on the presence of inspectors of the country

International (Contd.):

whose flag the ship flies. Proposals were before the Commission that these ships should each carry an observer of some other nationality than that of the flag country. The proposal was agreed in principle and it was decided that the detailed working out of a plan would be left to Japan, U.S.S.R., and the United Kingdom, who would consult with the Netherlands and Norway and endeavour to bring a scheme before the Commission as soon as possible.

The Commission considered the question of the humane slaughter of whales. It was agreed that a small subcommittee should be appointed to examine the advantages and disadvantages of the various methods of killing whales with a view to recommending a program of research and development for the improvement of existing methods and the possible development of new ones.

The Commission took note that 20 factoryships operating in the Antarctic took a total of nearly 31,000 baleen whales

(equivalent to 15,300 blue-whale units) during a season lasting from January 7 to March 16, 1959, and 2,052,000 barrels of whale and sperm oil were produced. The catch of blue whales--the largest species--fell from about 1,700 in the 1957/58 season to about 1,200 in the 1958/59 season. The number of fin whales taken was 25,700, compared with 25,100 in the previous year. Some 2,400 humpback whales, about 2,000 more than last year, were taken during the 4-day season for this species. The catch of sperm whales was 5,400, against 6,300 in the previous year. Antarctic land stations took 816 blue-whale units yielding 103,000 barrels of oil.

Fifty-two land stations and three floating factories operated outside the Antarctic during 1958. Some 24,000 whales were taken compared with 6,000 in 1946, the increase being mainly due to the larger catch of sperm whales. The production of whale oil amounted to some 315,000 barrels (at 6 barrels to the ton), about the same as in 1957, but production of sperm oil increased by about 30,000 barrels to some 402,000 barrels.



Australia

FROZEN SHRIMP EXPORTS,
1956/57-1957/58:

During the fiscal year 1957/58, frozen shrimp exports (raw heads on and heads off and cooked heads off) from Australia totaled 299,522 pounds, a decrease of 17,865 pounds, or 6 percent, as compared with fiscal year 1956/57. Frozen raw headless shrimp made up most of the exports.

The United States received 170,193 pounds, or 57 percent of the 1957/58 total exports, and Honolulu was second with 96,350 pounds, or 32 percent. Nearly all of the shrimp exported to the United States was frozen raw headless.

	Frozen Shrimp Exports from Australia, 1956/57-1957/58							
	Raw Shrimp				Cooked Shrimp		Total	
	Heads On		Heads Off		Heads Off			
	1957/58	1956/57	1957/58	1956/57	1957/58	1956/57	1957/58	1956/57
	(Pounds)							
By State of Landing:								
New South Wales	100	2,747	5,100	21,545	10,229	27,154	15,429	51,446
Queensland	2,250	1,446	266,300	198,280	15,543	66,215	284,093	265,941
Tasmania	-	-	-	-	-	-	-	-
Total	2,350	4,193	271,400	219,825	25,772	93,369	299,522	317,387
By Country of Destination:								
United States	-	-	170,050	128,885	143	-	170,193	128,885
Honolulu (Hawaii)	2,050	-	94,300	83,265	-	20,190	96,350	103,455
Other Countries	300	4,193	7,050	7,675	25,629	73,179	32,979	85,047
Total	2,350	4,193	271,400	219,825	25,772	93,369	299,522	317,387
Source: Department of Primary Industry, Fisheries Division.								
Note: Fiscal year - July 1-June 30.								

Source: Department of Primary Industry, Fisheries Division.

Note: Fiscal year--July 1-June 30.

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Belgian Congo

CANNED SARDINE MARKET:

Summary: It is estimated by the major wholesalers and retailers in Leopoldville, that about 95 percent of the sardines and pilchards (California-type sardines) imported into the Belgian Congo and Ruanda-Urundi are sold to Africans. The main sales consideration for this market is simply price. Most of the pilchards are sold in the tall one-pound can, natural pack, at 11-13 francs (22 to 26 U. S. cents) retail. Nearly all sardines are sold in the 1/4-club (4.5 ounce can), packed in peanut oil, for 5-6 francs (10 to 12 U.S. cents).

The pilchards are imported mainly from South Africa, and the sardines imported from Portugal. A case of South African pilchards, delivered at the Belgian Congo port of Matadi, sells wholesale at US\$1 or more below comparable packs of California pilchards. A case of Portuguese sardines sells c.i.f. Matadi at the same price, or less than similar United States packs f.o.b. Los Angeles. Unless the prices for canned California pilchard are lowered to competitive levels, there will be but a very limited market for them in the Belgian Congo.

Imports: Total sardine imports in 1958 were about 2.2 million pounds valued at 21,555,526 francs (US\$431,111). By far the largest sardine imports (about 1.6 million pounds) were Portuguese. These amounted to 15,411,401 francs (\$308,228) in value, and constituted about 71 percent of the total. Imports of sardines from the United States in 1958 amounted to only 41,000 pounds, valued at US\$7,000.

There were 1.4 million pounds of pilchards imported in 1958 with a value of 7,785,878 francs (about \$155,717). South African pilchards made up 86 percent of the total pilchard imports, while those from the United States were but .01 percent.

Stocks: Sardines and pilchards are well-established market items in the Belgian Congo, with a very slow growth in sales. Wholesalers have a clear idea of their market needs, and hold their inventories down to the minimum. They buy 1-3 months' stock at a time, tailoring the amounts according to discounts and to quantities offering the lowest transportation costs. There is little stockpiling as local storage is expensive, the demand is steady, and there is a buyer's market.

The size of inventories seldom affects local prices. Occasionally, one or more of the largest dealers may be caught short by a delayed delivery. Sardine and pilchard prices have then run up a little, about one cent on the cheapest sardines and 2-5 cents on natural pack pilchards. It is, however, a rare occurrence. Inventories of United States and Japanese sardines are small, and at times those products may be completely off the local market.

Consumer Preference: The African consumer is very aware of brands, faithful to a product which has initially satisfied him, and extremely cost conscious. He will seldom buy pilchards costing more than 11 to 13 francs (about 22 to 26 U.S. cents) a pound can, or sardines in the 4.5 ounce 1/4-club can for more than six francs (12 U.S. cents). The preferred pilchard pack is the tall one-pound natural pack. Tomato-sauce packs in one-pound cans are also sold to the Africans, but constitute only a third of the volume of the natural pack. Very few oval cans are sold in the African market because they cost more without any offsetting gain in contents.

The most popular sardine pack among the natives is the 1/4-club can packed in peanut oil. It sells completely stripped, without wrapping, coloring, or imprinted advertising. The only mark on the can is a country-of-origin seal stamped into the metal. Dealers generally agree that the village African prefers peanut oil to olive oil as a pack, and wants thick oil with a good strong smell. The city native likes olive oil, but will seldom pay the higher price for it.

One of the wholesaler-retailers stated that there was some latent African resistance to United States sardines.

The preferences of the European population are very largely a matter of nationality and of buying patterns established prior to residence in the Congo. Each nationality tends to buy the products of its country. Portuguese sardines, however,

are generally esteemed, and are available in a great variety of qualities and prices. Sales of sardines to Europeans are largest for the high-quality Portuguese products, and for French and Dutch brands. Spanish, Japanese, Moroccan, and Yugoslavian sardines or pilchards are available, but their European sales volume is small. There are no United States sardines or pilchards presently being sold on either the European or African market in Leopoldville.

Marketing Problems: There are no major market problems for sardines or pilchards. Dealers are bothered by delays in shipments, and the logistics of bimonthly purchasing, but no more so than for most imported commodities. The main market problem for California sardines or pilchards in the African market is their relatively high price. The competition from South African pilchards appears too strong to permit hope for any extensive sale of California pilchards in the Belgian Congo. Trade officials from South Africa indicate that the wholesale price of a case of South African natural-pack one-pound cans of pilchards could be reduced 50 U.S. cents should the California product be lowered to the present competitive level of \$5.00 to \$5.50 per case c.i.f. Matadi.

Japanese sardines are very competitive in price, but the Belgian Congo Government severely limits Japanese imports. Japan buys little from the Congo, and the Administration's policy is to preserve a balance of payments between the two countries by limiting the sale of Japanese goods. The main competitor for American sardines on the African market is Portugal, which exports a very wide range of qualities to the Congo.

For the European market, the price of United States sardines appears competitive. The American community in Leopoldville, however, is about 150 persons, including children. The other Americans in the Congo, mainly missionaries, are widely scattered. There is no American preference demand of any consequence, and the California pilchards would have to combat other well-established national products in a very limited market.

Prices: The wholesale price of a case of South African pilchards, 48 cans to the case, natural-pack, tall one-pound cans is now 39.5 to 43 shillings (about \$5.60 to \$6.00) c.i.f. Matadi. The tomato-sauce pack is 1-3 shillings (14-42 U.S. cents) more expensive.

The wholesale price of a case of Portuguese sardines, 1/4-club, peanut oil-pack is 300 to 330 francs (\$6.00 to \$6.60) a case (96 cans) c.i.f. Matadi.

Market Outlook: The African market for sardines and pilchards is large, but is showing no sustained growth. Its rate of increase is estimated by local dealers at about five percent a year. As the rate of population growth for Africans is itself 2.5 percent, the actual rate of increase of sardine sales is low. Total import values for both sardines and pilchards were less in 1958 than in 1957, but it seems probable that this was caused by the recession and fall in African buying power.

There is much increased competition from fresh and smoked or salted fish. Their prices are much less than for canned sardines, and local fish is preferred by the native, particularly when smoked. The production of local fish is increasing as the Belgian Congo Government is giving native fishermen every possible assistance, and is teaching villagers to develop fish ponds. Canned sardines and pilchards will face rapidly increasing competition from this source, and also from imports of salted ocean fish.

The immediate marketing potential for California pilchard sales is very slight unless prices are much reduced. The price differential between California sardines and competing products is increased when freight and insurance, estimated at about a dollar a case, are added to the California products. There will be no real market for the California sardines and pilchards without significant price cuts. (United States Consulate dispatch from Leopoldville, May 4, 1959.)



Brazil

JAPANESE-BRAZILIAN WHALING ENTERPRISE ACQUIRES TWO CATCHER BOATS:

A Japanese company in mid-May purchased from another Japanese firm two whale catchers, the No. 8 Toshi Maru and No. 11 Toshi Maru, each of 540 tons gross, with 1,800-horsepower reciprocating engines, at a price of 112 million yen (US\$311,000). The company completed preparations for whaling off the Brazilian coast by the joint Brazilian-Japanese company set up for that purpose in Brazil. About 45 men who are to work for this joint whaling enterprise were to sail for Brazil on the two catcher boats around July 10, 1959. (Nikkan Suisan Tsushin, June 1, 1959.)



Canada

MARINE OIL PRODUCTION, FOREIGN TRADE AND CONSUMPTION, 1958:

Production: Marine-animal oil production in Canada fluctuates sharply from year to year in accordance with the success or failure of the British Columbia herring fishery and to a lesser extent the seal fishery on the East Coast. In 1958, Canada produced 5.7 million Imperial gallons of marine oils as compared with 3.8 million gallons in 1957 and about 6.2 million gallons in 1956. The increase of about 48 percent in 1958 over 1957 was due to more landings of herring in 1958 in British Columbia.

	1958	1957 ^{1/}	1956
	... (Imperial Gallons ^{2/}) ...		
Atlantic:			
Cod oil	630,540	823,323	965,198
Herring oil	3/	107,900	148,271
Other (seal, etc.)	4,938,562	712,843	405,436
Total	1,569,102	1,644,066	1,518,905
British Columbia:			
Herring oil	4,127,761	2,180,510	4,725,903
Canada Total	5,696,102	3,824,576	6,244,808

1/ Revised.
2/ One Imperial gallon = 1.2009 United States gallons.
3/ Not available as a separate item.
4/ Includes herring oil.

Exports: Canada was a net exporter of marine animal oils in 1956 and 1957 and estimates for 1958 indicate that im-

ports and exports are about in balance. In 1958, United States imports of herring and whale oils dropped sharply from the preceding two years, but in all three years the United States was Canada's best customer for cod-liver oil.

Table 2 - Canada's Exports of Marine Oils by Type and Country of Destination, 1956-1958

	1958	1957	1956
	... (Imperial Gallons) ...		
Cod-liver oil, crude:			
United States	4,056	52,120	67,243
Cod-liver oil, sun-rotted:			
United States	427,287	519,465	587,777
United Kingdom	96,974	29,425	-
Others	-	540	-
Total	524,261	549,430	587,777
Herring oil:			
Germany	162,837	-	1,133,558
Netherlands	277,733	-	99,555
Venezuela	-	-	2,222
United States	-	20,100	139,234
United Kingdom	298,666	-	-
Total	739,236	20,100	1,374,569
Whale oil:			
Netherlands	-	-	91,067
France	-	720	307
United States	87,290	193,312	257,776
United Kingdom	262,888	-	-
Sweden	-	19,070	-
Total	350,178	213,102	349,150
Fish oils, unclassified:			
Sweden	-	-	893
Alaska	400	63	573
United States	4,676	33,347	11,435
Others	2	7	478
Total	5,078	33,417	13,376
Total marine-oil exports	1,622,809	868,169	2,392,115
Total marine-oil exports to United States	523,209	818,344	1,063,465

Imports: In 1958 marine-animal oil imports were about 1.7 million gallons--up sharply from exports of 448,000 gallons in 1957 and 491,433 gallons in 1956. The United States share of Canada's marine-oil imports varied from about 65 percent in 1956 and 1957 to 85 percent for the first eleven months of 1958. The sharp increase in Canada's imports of fish oils in 1958 was probably due to a shortage of herring oil in Canada until the late fall of this year.

Consumption of Marine Oils: In Canada marine oils are used mainly for the manufacture of oleomargarine and shortening, with smaller quantities used in the manufacture of soap. In 1958, about 19.8 million pounds of marine oils were used in the manufacture of oleomargarine and 16.7 million pounds were used in shortening.

Canada (Contd.):

Table 3 - Canada's Imports of Marine Animal Oils by Type and Country of Destination, 1956-1957 and January-November 1957-1958

	January-November		1957	1956
	1958	1957		
	(Imperial Gallons)			
Cod-liver oil:				
United Kingdom	187,247	65,429	96,454	72,795
France	-	-	-	22
Norway	3,400	24,340	25,040	60,904
United States	11	537	537	396
Others	1,087	-	-	-
Total cod-liver oil	191,745	90,306	122,031	134,117
Fish oil, unclassified:				
Japan	24,540	19,922	21,311	28,267
United States	1,367,820	280,046	280,563	300,160
Others	8,895	-	-	-
Total unclassified fish oil	1,401,255	299,968	301,874	328,427
Whale & Sperm oil:				
United Kingdom	7,169	8,203	8,203	11,219
United States	9,859	14,841	15,176	17,670
Norway	3,857	1,118	1,118	-
Total whale & sperm oil	20,885	24,162	24,497	28,889
Total all marine oils	1,613,885	414,436	414,436	491,433
Total marine-oil imports from United States	1,377,690	295,424	295,424	318,226

Table 4 - Canada's Consumption of Marine Oils in Margarine and Shortening, 1954-1958

	1958	1957	1956	1955	1954
	(1,000 Lbs.)				
Margarine:					
Production	145,607	130,645	124,707	125,094	115,868
Marine oils used	19,806	17,070	16,835	23,497	15,783
Percent	13.6	13.0	13.5	18.8	13.6
Shortening:					
Production	163,288	152,047	157,244	153,745	156,714
Marine oils used	16,741	26,377	21,298	21,003	15,974
Percent	10.2	17.3	13.6	13.6	10.2



Chile

LEGISLATION DRAFTED TO PROMOTE FISHING INDUSTRY:

The Chilean Government's Development Corporation, assisted by the National Fishing Society (Sociedad Nacional de Pesca) and the Fishing Association of Chile (Asociación Pesquera de Chile), have drafted a bill to be presented to Congress during the May 21 to September 18, 1959, session. This bill is intended to promote industrial fishing activities in general. Tax rebates and exemptions for fishing firms are among its provisions and it is hoped this will facilitate credits from private sources for the renewal of fishing fleets and existing equipment.

The Chilean fishing industry experienced a considerable growth between 1953 and 1956 while it enjoyed the protection of Decree 208 under which it was granted special privileges within the then existing system of controlled imports and fixed rates of exchange. Between 1945 and 1953, Chile's yearly production of fish did not exceed 50,000 metric tons.

In 1956 a law was passed abolishing all privileges and the fishing industry suffered a setback which resulted in unemployment, lower production, and closing down of industries. The landings of fish, shellfish, and other marine products which amounted to 87,000 metric tons in 1953 reached a peak of 169,000 tons in 1955 and in 1958 totaled 161,000 tons.

From 1953 to 1956, the Chilean fishing industry grew without plan and while many new companies using imported new machinery and equipment for processing were started, little attention was paid to the lack of a well equipped and efficient fishing fleet. During those years, many foreign fishing vessels, and their crews, were hired but the actual number of Chilean boats remained inadequate, nor was there any plan followed to coordinate the industry's operations or promote the building of fishing vessels within the country.

In comparison, Peru, which started its fishing industry at a much later date, but was assisted by foreign capital

Chile (Contd.):

and know-how as a result of its favorable policies towards foreign investors, now has 5 well-equipped shipyards. These yards have been launching between 30 and 40 vessels a year. Peru has a fishing fleet of some 500 vessels of over 70 metric tons each, in good operating condition. On the other hand, despite its relatively better position with respect to raw materials, labor, power, and a wider variety of fish, Chile has a fishing fleet of only 70 vessels of over 70 metric tons each, of which no more than 50 are believed to be in seaworthy condition. Moreover, of these 50 there are 8 foreign vessels now working for Chilean firms. Chile has no shipyards capable of building modern fishing vessels.

It is significant that with a population not much larger than Chile's and a lesser number of potential consumers Peru in 1958 caught 980,000 metric tons of anchovies in addition to other varieties, while Chile's total fish catch during the same year was only 161,000 tons.

Equally significant is the fact that Peru, despite insufficient transport facilities and a lack of readily available power and labor, has managed to create a strong fishing industry. Chile, with better potentialities, is in a very inferior position. One cause of this anomaly is obviously the fact that while Peru has encouraged the admission of foreign capital and know-how, Chile has done nothing to attract them.

The present Chilean Administration is greatly concerned over this situation and is seeking ways and means of solving the industry's problems. It plans to promote greater consumption of fish in Chile through a broad educational campaign as a means of cutting down on the importation of Argentine beef and creating more jobs; it proposes to increase the protein factor in the diet of the average Chilean; it plans to stimulate the industry's growth by providing long-term credits at lower rates of interest, and reducing taxes.

Chilean exports of fish meal have varied from 3,332 metric tons in 1953, to a low of 1,387 tons in 1954, a high of 8,654 in 1955, and slightly over 4,000 tons for each year from 1956 through 1958.

At the present time there are approximately 42 companies engaged in the Chilean fishing industry. Not more than 20 of these can be considered of importance or are believed to own adequate processing equipment. The efforts of many small firms to improve their operations have been thwarted in the past years by lack of capital. Chile's new legislation is expected to assist both small and large firms to obtain credits for the purchase of equipment from private institutions on reasonable terms, and their future operations are expected to become more profitable through the reduction of their tax load. The new bill, when passed, will favor more particularly those firms which plan to engage in export operations and thus become dollar earners. It will also encourage foreign capital willing to assist the Chilean fishing industry in its development and search for export markets, the United States Embassy in Santiago reported on June 3, 1959.

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TWO UNITED STATES FIRMS INTERESTED IN DEVELOPING FISHERIES:

Two United States firms have expressed interest in developing Chile's fisheries. The plan of a Seattle company and an East Coast byproducts company is to bring four modern fully-equipped fishing vessels to Chile around September 1959. The vessels will catch and sell fish on a commercial basis to demonstrate the advantages of new equipment and modern

methods. The same firm will establish boat building and maintenance facilities. It has been estimated that 100 boats are needed now to meet existing shortages in Chile and 100 additional boats will be needed to replace obsolete Chilean equipment.

The United States east coast byproducts firm is interested in investing in fish reduction plants if results from the demonstration fishing fleet are favorable and if new regulations affecting the fishing industry are adopted by the Government.

Numerous studies have been made on Chile's fisheries. Most of the reports indicate good fishery resources. But the Chilean fishing industry to date has not been able to fully realize the potential of its fisheries. Fishing vessels are old, poorly equipped, and in bad condition. Fishing methods are outdated. Existing fish reduction plants are relatively modern, but are operating far below capacity due to lack of raw material.

New fishing regulations have been proposed and are under consideration by the Executive Branch of the Chilean Government in order to attract greater private investment in the fishing industry through tax exemptions and other measures.



Cuba

CLOSED SEASON ON SPINY LOBSTER ENDS:

The Cuban National Fisheries Institute terminated the closed season on spiny lobster effective June 20, 1959. The Resolution terminating the above closed season was published in the Official Gazette, No. 108 of June 16, 1959. The original closed season on lobster capture was imposed on March 15, 1959, the United States Embassy in Havana reported on June 24, 1959.

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CLOSED SEASONS FOR SHRIMP, OYSTERS, AND TORTOISES:

The Cuban National Fisheries Institute initiated a closed season on the capture

Cuba (Contd.):

of tortoises and shrimp, effective June 15, 1959. The closed seasons for these species were to remain in effect until August 30, 1959.

The Institute also imposed a closed season on the capture of oysters off all coasts, with the exception of the provinces of Camaguey and Oriente. The closed season was effective as of June 10, 1959. Oysters from the provinces of Camaguey and Oriente when shipped to the market must be accompanied by a permit which will be issued by the Port Delegates of the Institute. This closed season will remain in effect until cancelled by a subsequent resolution.

The pertinent resolutions establishing the above closed seasons were published in the Official Gazette No. 101 of June 5, 1959.



Ecuador

CANNED SARDINE AND SALMON IMPORTS:

Imports of canned sardines and salmon into Ecuador during 1958 totaled 1.6 million pounds, valued at \$246,944, according to a United States Embassy dispatch from Quito dated May 29, 1959.

Ninety-four percent (1.5 million pounds) of the total quantity and 91 percent (\$223,659) of the total value was received from the United States, and believed to consist almost entirely of sardines.

Ecuadoran Imports of Canned Sardines and Salmon, 1958 1/		
Country	Quantity	Value
	1,000 Lbs.	US\$ 1,000
United States	1,503	224
Portugal	70	10
Panama	11	1
Union of South Africa	6	1
Canada 2/	4	1
West Germany	2	1
Other Countries	4	1
Total	1,600	247

1/ Mostly sardines, as very little canned salmon is consumed in Ecuador.

2/ Canned salmon.

Notes: The dollar value is based on the official exchange rate of 15.15 sucres = US\$1.

Current Consumption Trends: An excess of California sardines exists in Ecuador. Although there is a marked preference on the part of the Ecuadoran consumer for California sardines, it is possible to note in 1958 a relative growth in the consumption of other sardines, principally Portuguese.

Principal reasons that total imports of canned sardines in general and California sardines in particular are diminishing are the following:

(a) **Depressive Elements in the Economy:** During 1958 these elements have caused a possible low intake per capita and, consequently, in the demand for both national and imported consumer goods.

(b) **Greater Competition:** Three national sardine canners are now competing in the market. Although the quality of their product is not the best, the difference of about 20 percent in the sale price compared with similar imports (California sardines) is attractive to consumers. Canned tuna also has displaced usual consumers of imported sardines. Substitution of national products such as sardine and tuna for the imported canned sardines has resulted in the improvement of these products by local consumers.

(c) **Import Restrictions:** Maintenance of tariffs, advance deposits in the Central Bank as required prior to the granting of an import license, and the acquisition of exchange in the free market at an average exchange rate higher than that of 1958 are discouraging several sardine importers from continuing in the business.

(d) **Strong Devaluation of the Colombian Peso:** This has brought to a halt re-exportation of imported canned sardines that at other times took place in considerable quantities through commercial contraband with Colombia.

(e) **Decrease in Price of Similar European Products:** During the first quarter of this year several Portuguese sardine canning firms announced reductions of about 5 percent of the original f.o.b. price, possibly caused by the strong international competition in the marketing of these products.

Outlook: Although the general economic condition is slowly improving and better income levels are hoped for this year, the prospects for the import of California sardines are not good.

The surplus of stocks more than the strong competition of Portuguese and other European sardines and tuna has contributed to lowered prices of California sardines and a contraction of earnings on such sales. Consequently, the future for imports of these sardines is unfavorable.

The domestic sardine canning companies are making considerable efforts to improve the quality of their product with hopes of increasing sales and production. Consequently they are attracting an even greater number of the consumers of California sardines because of the similarity of this product, and it is probable that this will also affect the consumption of the European product to some extent. An Ecuadoran tuna canning company, a subsidiary of a large United States west coast cannery, soon hopes to use modern machinery for tuna canning, resulting in the reduction of prices and the widening of their market. The reported plans of the company to embark soon on the production of canned sardines as a subsidiary of the California company may result in obtaining a favorable export margin.

The expected expansion of this industry in Ecuador indicates that restrictions on imports probably will be maintained as a means of protection and eventually imports may be prohibited if the country becomes self-sufficient.

The stores of the Ecuadoran Social Services, Police, and Armed Forces enjoy liberation privileges for imports and are importing sardines, although not in large amounts. However, a project exists for the conversion of the stores to the exclusive sale of national products.

It is estimated that only a reduction in the export prices of California sardines which takes advantage of the highly flexible price that governs this product on the Ecuadoran market and nullifies the relative advantage of the similar national product or the granting of special credit conditions in favor of importers would be able to result in maintaining unchanged or improved levels of import of this product. (United States Embassy Quito, report of May 29.)



Ethiopia

DEVELOPMENT OF COMMERCIAL FISHING INDUSTRY PLANNED:

It was reported on June 9, 1959, in an Ethiopian daily newspaper by the Ministry of Press and Information, that a "fisheries training vessel" is being constructed at Massawa by the Ethiopian Government at a cost of Eth. \$45,000 (US\$18,000), and that it is being supplied with Eth. \$15,000 (US\$6,000) worth of equipment. The vessel and equipment are being financed by the United States Overseas Mission FY 1957 Defense Support Funds.

The newly established Ethiopian Section of Fisheries has employed a Danish fishing expert to undertake the training of five students, who have already been recruited to enroll in the course. The project, which is one of the first in the Naval Department's development program will, when established in the near future, qualify fishing officers who will serve as extension agents of the Fishing Section. They will be charged with the responsibility of advising local fishermen to whom they will also serve as government links.

The Fisheries Section plans to embark on a great and varied campaign to improve fishing in Ethiopia. The country has 5,000 miles of sea coast for fishing grounds extending for 12 miles out to sea in its territorial waters. While the coast stretching 150 miles from the border of the Sudan to Massawa is generally regular, the remaining area from Massawa to the French Somaliland border is mostly indented and is thus well suited for fishery development. Several of the inhabited islands off the east coast of Massawa and especially the Dahlak archipelago are rich fishing grounds. When the additional funds allocated by the Imperial Ethiopian Government Economic and Technical Assistance Board have been utilized, there is no reason why, with proper and planned development, Ethiopian fishing grounds cannot provide enough to meet the fishing needs of the country and a possible surplus for marketing abroad.

The development plans of the Fishery Section also include the establishment of

fishery centers along the coast. Upon the completion of their training, each of the five fishery officers will be assigned to head a fishery center and will be delegated to assist the fishing population in his area. Local fishermen, who show sufficient interest in bettering themselves, can be permitted to use the training vessel temporarily. The government will also be prepared to assist financially fishermen interested in the purchase of fishing vessels.

Another phase of the development program is directed at regulating the primitive methods of fishing applied in the inland waters. The Fisheries Section has at present fishery administrative branches in Massawa and Assab. A survey project on the lakes and rivers in the interior will commence shortly to ascertain the extent of fishing potential and the fishing methods utilized. If this survey, however, is to prove worthwhile, the assistance of experts of United Nations Agencies in Ethiopia will have to be secured.

One of the several foreign governments who have shown interest in the promotion of fishing in Ethiopia is the Israeli government. The Fisheries Department of Israel has already requested to undertake a survey of Ethiopia's fishing grounds in the Red Sea to ascertain the fishing potential in that area. The outcome of this survey may result in a joint project which can prove profitable to Ethiopia. (United States Embassy in Addis Ababa, June 10, 1959.)



French Guiana

DEVELOPMENT OF SHRIMP FISHERY PLANNED:

Plans are under way for the development of a shrimp fishery off the coast of French Guiana, with Cayenne as base of operations, according to a report by the United States Consulate in Martinique.

The Credit Agricole Director pointed out the following:

(1) Scientific studies of fishing resources in French Guiana waters have disclosed the presence of a large quantity of shrimp

French Guiana (Contd.):

along the edge of the continental shelf about 15 miles off the coasts of Surinam and French Guiana, extending down to the vicinity of Cayenne.

(2) The shrimp are quite large, and when full-grown measure from 7.1-8.7 inches in length. Development of a shrimp-fishing industry, with the United States as the principal market, would contribute materially to the economy of French Guiana, and the French Government is prepared to extend substantial credits through the Credit Agricole to get such an industry started.

(3) The first step is the development of a fishing base at Cayenne. This involves the building of a marine railway and repair base, with repair shops. There is already 220 cubic meters of cold-storage space at Cayenne, which could easily be increased; and ice-making capacity of 40 tons a day. Electrical generating capacity is more than sufficient for any expansion.

(4) Next item is a small fleet of fishing boats. From 5 to 10 vessels 50 to 70 feet long are believed to be the kind of fleet needed. Vessels would not be equipped with mechanical refrigeration, but would carry ice. It has been proposed that Guadeloupe's fully-equipped fishing vessel, the *Governor Felix Eboué* be brought to Guiana to form the nucleus of a fishing fleet, but the Director said that present thinking is that the vessel is too big and elaborate for the job. It could, however, be used as a sort of mother-ship, to supply ice to and take on shrimp from the smaller vessels actually fishing.

(5) It is believed that in the course of trawling for shrimp, the vessels would haul in many edible fish. These would be sold on the local market in Cayenne. Only the shrimp would be packed and shipped, probably by cargo plane to the United States.

(6) It is primarily in the packing, shipping, and marketing phase of the operation that the French feel that they will need American technical assistance. The Director said that the French want to do a

top-notch job of preparation and packaging, to make the final product meet the highest American standards and bring the best possible prices.

According to reports, the French would like to keep the shrimp fishing industry in French hands, if they can. On the other hand, it is evident that they intend to start on a small scale.

It would appear from the location of the shrimp along the edge of the continental shelf that they lie well outside French territorial waters. However, it would be difficult for anyone to fish the shrimp without using Cayenne as a base of operations, as there is no other port in the area. It appears to be the French plan to start with development of a fishing fleet base in Cayenne, and to make further decisions as the situation develops. (United States Consulate in Martinique, June 23, 1959.)



Greenland

FACILITIES FOR FISHING
INDUSTRY TO BE EXPANDED:

A program of expansion of industrial projects in Greenland includes the establishment of fish canning and filleting plants, salting houses, and freezing and cold-storage facilities at Jakobshavn, Christianshaab, Godthaab, and Frederikshaab. The expenditures involved are estimated at 16.7 million kroner (US\$2,418,000) and will, it is expected, result in a material increase in the output of processed fish and shellfish in Greenland.

Full utilization of the expanded processing capacity will necessitate an increase in the number of fishing vessels and a changeover to larger seagoing vessels. However, the acquisition of new fishing vessels is outside the present program and, as in the past, will be undertaken by the Greenland fishermen, who are private owners of the fishing fleet, with the assistance of existing government subsidy facilities. It is estimated that between 5 and 6 million kroner (US\$724,000-\$869,000) will be required for the acquisition of new fishing vessels during the next several years.

Greenland (Contd.):

Facilities for the landing of fish in Greenland will be improved considerably through the construction of a new fisheries harbor at Godthaab and the expansion of existing harbors at Holsteinborg and Frederikshaab and mooring facilities at Jakobshavn, Christianshaab, and Sukkertoppen. The establishment of a fisheries harbor at Godthaab has been contemplated for several years and is considered necessary for the successful operation of the fish-processing plants. The total expenditures on these projects is estimated at 7.6 million kroner (US\$1,100,000), including 6.2 million kroner (US\$898,000) for the new harbor at Godthaab (United States Embassy report of June 19 from Copenhagen).



Hong Kong

FISHERIES TRENDS,
FIRST QUARTER OF 1959:

The Hong Kong fishing fleet landed about 22.1 million pounds of fresh marine fish during the first quarter of 1959. This catch was valued at HK\$14,338,986 (US\$2,509,000). About 2.0 million pounds of salt-dried fish, with a value of HK\$808,963 (US\$142,000), were landed. During the quarter about 208,600 pounds of shrimp were marketed through the Fish Marketing Organization. This limited supply of shrimp was principally for export to the United States. The marketing officer of the Fish Marketing Organization reports that the first quarter is the slack season for shrimp fishing in Hong Kong.

The Hong Kong fishing fleet continued to suffer from Communist-imposed restrictions on the use of the waters off the Pearl River delta. At the beginning of the quarter a Hong Kong fishing trawler was fired upon by a Chinese communist gunboat. However, there were no more incidents and at the end of the quarter authorities of the Hong Kong Government reported that although the Communists' restrictions were still in force, they were not being administered with great vigor. Hong Kong fishing vessels venturing into waters claimed by the Chinese Communists still run a risk. This risk

lies heaviest on wind-driven vessels which cannot shift fishing grounds rapidly.

About 200 fishermen who have been turned out of work by the Chinese Communist ban have accepted employment as construction workers on the new Shek Pik reservoir on Lan Tao Island. This employment was arranged by the Hong Kong Fishing and Commercial General Association, who obtained the cooperation of the construction company which is doing preparatory work on the reservoir. Of some interest to the Hong Kong fishing industry was the proposal put forward by two unofficial members of the Legislative Council that the Government take the lead in developing a fishing fleet. Although the Government has not officially accepted this proposal, it is possible that some action may be taken in this direction. (United States Consul in Hong Kong, June 10, 1959.)



Iceland

HERRING FISHERY TRENDS:

At the end of the main winter cod fishing season (ended May 10), most of the Icelandic motorboat fleet hauled-out for refitting in preparation for the herring season off the North Coast and in mid-May moved north to converge on the herring fishing grounds. In 1958, there were 242 Icelandic boats engaged in the North Coast herring fishery, and approximately the same number were expected to take part this year. Stormy weather kept the boats from starting as early as last year (June 17), but the first catches were expected about June 20.

The Icelandic Government agreed that the Export Fund should pay 70 percent export premium on North Coast herring processed as meal and oil, and 75 percent when salted.

The Herring Board has completed advanced sale contracts with Sweden and Finland, but negotiations are still underway with the U.S.S.R. and East Germany, the other two leading buyers.



India

EXPERIMENT WITH THAILAND CARP IN WEST BENGAL WATERS:

A species of carp (*Cyprinus carpio*) new to India, was introduced from Thailand last year and has been reared with encouraging results at the West Bengal Government's Departmental Fish Farm at Duttabad. The Thailand carp is a strain of a dwarf type of Chinese origin. This is reported to be the first attempt in India to cultivate this species with a view to ascertaining its compatibility with local varieties.

The important characteristic of this species which makes it suitable for conditions in West Bengal is that it is a prolific breeder and can breed in confined waters year-round. This solves a serious problem of procuring spawn for inland fisheries; most of the West Bengal carp normally breed only in flowing and flooded rivers and lakes. While it has been ascertained that the Thailand carp can thrive simultaneously with local carp without adversely affecting the growth of the latter, further research work is under way to determine whether this species is a competitor of the local carp.

The rate of growth of this species is believed to be much greater and produces 50 percent more fish than the local carp. The maximum weight of some of those reared has been 6 pounds while the average weight is about $3\frac{1}{2}$ pounds. The maximum length attained is 20 inches. The perfect temperature for breeding has been found to be 32° C. (89.6° F.). Another important aspect of this species is that it grows naturally in confined waters, requiring practically no attention at all during growth.

The introduced Thailand carp with its various advantages over West Bengal carp holds out hope for increasing production of fish in inland water areas. Initially the Fisheries Department contemplates planting a small number of fish in selected ponds and tanks throughout the State where it can breed naturally.



Indonesia

CANNED SARDINE MARKET:

As of June 1959 canned Japanese sardines were about the only imported sardines on the Indonesian market. Early in 1959 there were some offerings of sardines from the Netherlands and the United States. The Japanese canned sardines are preferred in the Indonesian market because the price is lower and the quality about the same as for sardines from other foreign sources. No sardines are canned in Indonesia and imported sardines are popular, but imports are limited because of the short supply of foreign exchange.

During 1958 sardine imports amounted to about 2.5 million pounds. Imports from Japan accounted for 2.4 million pounds and the United States share was only 16,700 pounds. Netherlands and other countries also supplied small amounts.

Japanese canned sardines in June 1959 sold for about Rp. 30 (29 U.S. cents) a 15-oz. oval tin packed in tomato sauce. Six months earlier when the United States and the Netherlands provided a little competition, the market price of United States sardines in a 15-oz. oval can packed in tomato sauce sold for Rp. 20 (19 cents). The Japanese 15-oz. oval can in tomato sauce at that time sold for Rp. 15 (14 cents). (United States Embassy report of June 4 from Djakarta.)

Note: Values converted at rate of 104.2 rupiahs = US\$1.



Japan

CANNED LIGHTMEAT TUNA PRICE CUT CONSIDERED:

On June 18 at a conference of directors of the Japanese exporters' association and the Tuna Sales Committee, trading company representatives expressed their views on suitable selling policies for canned tuna in brine, both lightmeat and whitemeat.

Of this year's global quota of 2,490,000 cases of canned tuna in brine, the joint sales company has so far sold 1,230,000 cases. Third countries have exported about 160,000 cases to the United States.

Japan (Contd.):

The remaining 1,100,000 cases must be sold by October, but of this all that can be expected in the way of whitemeat supply is about 100,000 cases (the present whitemeat inventory of the sales company is about 40,000 cases), so the greater part of the quota must be filled with lightmeat.

Strenuous measures will be required to sell this lightmeat tuna, according to the Japanese. With regard to measures for selling the 1 million cases, it was reported that a certain trading company had offered to take on the whole amount at the present price. Some of the producers were urging the joint sales company to exercise its right to use only 50 percent, which is the sales company's free sales quota. There was strong opposition to those ideas, and the majority favored getting past the crisis by such measures as cutting the price of canned lightmeat and putting more effort into advertising. No conclusion was reached at the conference, and further meetings were scheduled. (*Nikkan Suisan Tsushin*, June 18, 1959.)

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CUT IN PRICE FOR LIGHTMEAT CANNED TUNA OPPOSED:

With reference to the Japanese tuna trading companies' proposed reduction of US\$1 in the price of lightmeat canned tuna in brine for export to the United States, it has been pointed out that such a cut would mean a loss of US\$800,000, even if lightmeat sales were held to the minimum level of 800,000 cases. If price reductions under floor clauses are included, the loss would amount to more than US\$1 million. Therefore, it was considered highly probable that the packers, who are under the necessity of producing whitemeat at a considerable loss, will absolutely refuse such a price cut and will rather seek a raise of about US\$3 in the price of whitemeat (*Nikkan Suisan Tsushin*, June 23, 1959.)

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CANNERS SCALE DOWN PROPOSED PACK OF CANNED WHITEMEAT TUNA:

The Japanese Export Canned Tuna Producers Association held a directors'

meeting on June 11 to discuss revision of its earlier plan on the pack ratio for lightmeat and whitemeat canned tuna. It was decided to reduce the whitemeat pack ratio from 55-65 percent to a minimum of 35 percent.



Cutting table in a tuna cannery in Hiroshima, Japan.

At a directors' meeting in March of this year it had been decided to produce canned tuna in brine for export this year in the ratio of 55-65 percent whitemeat to 35-45 percent lightmeat; however, since that time the landings of albacore (summer albacore), which are the raw material for whitemeat tuna, have been very light, and the ex-vessel price has increased steeply until in mid-June it was around 150-165 yen per kilogram (US\$378 to \$415 a short ton). This has limited the pack of whitemeat canned tuna. No maximum was set in order to allow for elasticity to cope with changes in the fishing conditions.

It is anticipated that packing will now be concentrated on lightmeat, but according to trading company sources, the market for lightmeat tuna in the United States, which is the largest market, is soft. (*Nippon Suisan Shimbun*, June 15.)

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CONSIGNMENTS OF CANNED TUNA FOR APRIL-JUNE 1959:

Scheduled consignments to the Tokyo Canned Tuna Joint Sales Company for the first quarter of the Japanese fiscal year (April-June) were about 960,000 cases, but up to June 18 they had received only about 820,000 cases (459,000 cases of

Japan (Contd.):

lightmeat and 362,000 cases of white-meat, both types canned in brine), leaving about 140,000 cases of the quota to fill.

It was estimated that there remain unsold out of those consignments 350,000 cases of lightmeat and 40,000 cases of whitemeat (7-ounce cans only)--13-ounce cans and 2-kilogram cans (4.4 pounds) are 45,000 cases short. If whitemeat was to make up more than 35 percent of the total production quota, as decided at the recent meeting of the directors of the canners' association, an additional 540,000 cases should have been consigned by July 3. However, the pack that could be expected from summer albacore, if the small landings of about 100 tons a day continue, would be only around 100,000 cases or, at most, including goods under inspection, etc., about 200,000 cases. (Nikkan Suisan Tsushin, June 23, 1959.)

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TUNA EXPORT REGULATORY COUNCIL PLANNED:

A visit by officers of the Japanese Export Tuna Canners' Association to the Chief of the Japanese Fishery Agency's Production Section on June 18, 1959, gave birth to the idea of setting up a regulatory council to be concerned mainly with tuna export problems. Since then the formulation of plans has proceeded speedily. The Fisheries Agency sections concerned have drawn up plans for the membership, organization, and operation of the council.

The council will have the status of a consultative organ for the Fisheries Agency, and will serve for liaison among groups which have hitherto lacked lateral connections. At the same time it will take up individually concrete problems related to exports, such as the foreign base problem and the transshipment problem, discuss them, and make decisions. Members are expected to be H. Ueda of the Export Tuna Canners' Association, K. Nakabe representing the freezers, and S. Masuda of the Tuna Fishermen's Federation. The idea is for responsible representatives of the industry, by consultation, to adjust problems which

are potential sources of trouble. The Fisheries Agency is thinking of making its granting or withholding of licenses and permits dependent on whether or not the council can reach agreement. (Nikkan Suisan Tsushin, June 22, 1959.)

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JOINT SALES COMPANY FOR FROZEN YELLOWFIN TUNA EXPORTS:

Discussions in Japan on the establishment of a frozen yellowfin export joint sales organization had been interrupted since May, but sentiment in favor of it has increased again because of the higher percentage of rejects reported on shipments to California tuna canners. On July 8 a committee composed of both land freezers and shipboard freezers, appointed by the Export Tuna Freezers' Association to study this question, met and agreed on the speedy setting up of a joint sales organization for exports of yellowfin tuna by liner from Japanese ports to the United States.

The consensus is that the establishment of a strong joint sales organization is essential in order to plan improvement of sales and reduce the amount of rejects at the canneries. The shipboard freezers (clipper operators) are taking the position that a condition of the establishment of a joint sales organization must be that the minimum ex-vessel price must be maintained at about \$200 a short ton, and the land freezers have also agreed on setting up a system to guarantee a minimum ex-vessel price.

The committee on setting up the joint sales organization held its first meeting on July 9, and informed sources say that the new sales organization's functions will not necessarily be limited to so-called "liner" exports from Japanese ports.

The following reasons are cited for the change in the clipper operators' stand about a joint sales company:

(1) The recent increase in rejects of transshipped tuna at California canneries has made the shipboard freezers feel keenly the necessity for setting up a strong sales organization to deal with claims and sales problems.

Japan (Contd.):

(2) As the novelty of the transshipment export trade wears off, there is certain to be an increase in the quantity of ship-frozen tuna landed in Japanese ports. This will bring a strong possibility of a drop in ex-vessel prices in Japan, and in order to forestall this, the clipper operators are moving in the direction of improving liner export prices and establishing minimum guaranteed ex-vessel prices.

(3) It has become impossible to expect that ex-vessel prices will stay at a high level even though export prices fall, as was the case until last year. Now ex-vessel prices and export prices have come to move up and down together, and this has brought the vessel operators around to feeling greater concern over the movements of the export market. (Nikkan Suisan Tsushin, July 10 and 13, 1959.)

METHOD FOR DETECTING GREEN MEAT IN RAW TUNA FOUND:

Lately, increasing buyers' claims against frozen tuna shipped from the Atlantic have been causing concern in Japan. A method has now been found for detecting, before cooking, the green meat condition which is the main cause of claims, and it is hoped that this will help solve the claim problem and reduce the percentage of green tuna rejects. (Previously, green-meat tuna could be detected only after cooking.)

The method has resulted from joint studies by the Frozen Aquatic Products Inspection Association and the Tokai Regional Fisheries Research Laboratory. They found that color of the kidney tissue of fish which showed green meat after cooking was conspicuously darker than that from normal fish, and they discovered an easy method of detection by using an aqueous suspension. The method is to take about 10 grams of kidney as close to the center of the organ as possible and mash it. Then 1 gram of the tissue is placed in a small flask, about 50 cc. of water is added, and the flask is shaken. The occurrence of green meat can be predicted by the color of this fluid. The gradations of color are:

- (1) red, reddish brown, slightly reddish brown
- (2) light brown, brown, dark brown, dry leaf color
- (3) brownish black, grayish black, black

Of these three colors, the green meat phenomenon turns up mostly in group (3), which looks like soot dissolved in water. The degree of accuracy attained was 80 percent at the Tokai Laboratory and 100 percent at the Inspection Association.

It is explained that the trade in yellowfin from the Atlantic through Haiti and Panama looked very hopeful at first because rejects were few, but since the first of this year the incidence of rejects has gradually increased until recently it has risen as high as 30 percent. People concerned have considered that this is probably an effect of the falling market for canned tuna, but at the same time serious thought has been given to finding a method of preventing or detecting in advance the green meat or dark meat conditions which are the main cause of claims against frozen tuna whether transshipped or exported from Japan. Source: Bulletin of the Japanese Society of Scientific Fisheries, vol. 24, no. 8, p. 679, Hirao et al. (Suisan Keizai Shimbun, June 16, 1959.)

FISHERMEN SEEK ALBACORE ON DISTANT GROUNDS:

The Japanese summer albacore fishery this year has been completely abnormal, and the ex-vessel price at Shimizu has risen to an unprecedented 180 yen per kilogram (US\$450 a short ton). Stimulated by these high prices and by reports that albacore schools have appeared far off to the east, part of the Shimizu fleet has begun a rapid movement into the eastern grounds. This movement was begun by boats from Kagoshima Prefecture, and now some Shizuoka Prefecture boats have moved out as far as 156° E. and 160° E. longitude, and exploitation of grounds 1,000 miles or more from the coast has begun.

Some of the Mie Prefecture boats, which are finding that skipjack fishing has slackened off, are also planning to make

Japan (Contd.):

their next trips for albacore 1,000 to 1,500 miles east of Japan.

Up to now the nearer grounds have afforded poor fishing, and the industry is watching with intense interest to see whether good fishing will develop off to the eastward. (Nippon Suisan Shimbun, June 27, 1959.)

SUMMER ALBACORE LANDINGS BELOW NORMAL:

Summer albacore landings in Japan as of July 11 amounted to only 7,200 metric tons. This is only one-third of the small 1958 catch, and about one-fifth of a normal year's catch. As a result, the Japanese freezers have been able to buy hardly any summer albacore, and the frozen tuna inspection office in Shimizu, for the first time since its establishment, has inspected no summer albacore for export.

The canners' pack of whitemeat tuna for export to the United States has finally reached 500,000 cases (including what the packers had on hand at the end of the last fiscal year). Counting on the expected pack from winter albacore, all packers except the three largest ones will just barely be able to fill their minimum white meat pack quotas of 35 percent of their total tuna pack allotments, so that on the canned pack side at least the worst possible shortage has been avoided. (Nikkan Suisan Tsushin, July 13, 1959.)

WORLD-WIDE TUNA FISHING CRUISE PLANNED:

Japanese tuna fishing circles in Shimizu are watching with interest the progress of a plan for a year-long, round-the-world tuna fishing trip. The vessel is No. 5 Seiju Maru (500 tons gross), which was due to sail in July with a captain and 30 crew members to fish in the Indian Ocean, the Mediterranean, the Atlantic Ocean, and the eastern Pacific Ocean, and sell the catch at various ports.

Principal fishing grounds will be in the Indian Ocean, off the Gold Coast of

Africa, and off Brazil in the Atlantic, and, after traversing the Panama Canal, in the Pacific Ocean around the Galapagos Islands. The catches of yellowfin and albacore will be landed in Germany, Yugoslavia, and Cristobal in Panama.

The Seiju Maru is the latest type of large tuna long-liner, and was planned for operations in distant waters. She carries 1.5 times as much fish as older boats of the same tonnage, and has the capacity to freeze 30 tons of tuna per day. The grounds that will be fished by the Seiju Maru were surveyed last year by the research vessel Shoyo Maru, of the Japanese Fisheries Agency. The industry is showing deep interest in this bold plan of a privately-owned vessel. The Seiju Maru is scheduled to return to Japan in July of 1960 (Nippon Suisan Shimbun, June 24, 1959).

MACKEREL-PIKE CANNERS PLAN- NING TO LIMIT PACK NEXT SEASON:

The Japanese Mackerel-Pike Export Canners Association met on June 5 and considered plans for the 1959 canning year (August 1959-July 1960). The plans were to be submitted to the membership at a meeting on June 18. The major points of the draft were: (1) Total production quota of mackerel-pike or saury to be 660,000 cases (past season's was 1,030,000 cases), of which 60,000 cases will be allocated equally among the canning companies, 500 cases to a producer. Last season there was no such equal allocation. The remaining 600,000 cases will be allocated as follows: 590,000 cases in the proportion of 8 based on past pack records to 2 in a free quota. A quota of 10,000 cases will be for new producers. (2) Use of the free quota will be limited to 5,000 cases per company, except that companies which joined in 1958 will be limited to 1,000 cases and those that joined in 1957 to 2,000 cases.

The large-scale cut in the over-all pack quota is considered unavoidable in view of the present sales situation and the inventories held by the joint sales company. Furthermore, the reserve quota and adjustment quota systems which were in effect the past season have been dropped because of the order for the

Japan (Contd.):

control of "outsiders" which was expected to be promulgated on August 1 of this year. (Nikkan Suisan Tsushin, June 6, 1959.)

MACKEREL-PIKE

CANNING PLANS FINALIZED:

The Japanese Mackerel-Pike Export Canners Association held a special general meeting on June 18 to consider mackerel-pike or saury packing plans for the 1959 production year (April 1, 1959-March 31, 1960). Export shipments for 1959 will be 660,000 cases (472,000 cases allotted by past production records, 118,000 cases free quota, and 70,000 cases to be equally allotted among packers). Sales prices and production quotas by can sizes and styles will be decided later. As of June 15, stocks held by the joint sales company were 462,478 cases. (Nikkan Suisan Tsushin, June 18.)

EXPORT PROSPECTS FOR
CANNED CRAB MEAT THIS YEAR:

It is expected that the pack of canned king crab meat this year by Japanese factoryships and land canners combined will be around 420,000 cases. Trading circles believe the prospects are for export of about 380,000 cases. Traders expect that of the 420,000-case pack, about 70,000 cases will be sold on the domestic market, leaving 350,000 cases for export. Of this it is estimated that 100,000 cases will go to the United Kingdom, 200,000 cases to the United States, and 50,000 to other countries. Of those principal markets, the 100,000 cases for the British is considered sure. The British consume annually about 200,000 cases, of which at present the U.S.S.R. and Japan each supply approximately half. If there is no sudden change for the worse in Britain's foreign exchange situation, and if the U.S.S.R. does not embark on any drastic price cutting, there will probably not be any change in this balance in the market.

With regard to the 200,000 cases for the United States no important change is expected.

Among the markets for the remaining 50,000 cases, hitherto Europe, Australia, and Hawaii have been most important, but it is thought that Hawaii's becoming a State may have an adverse effect on the export market there. (Nippon Suisan Shimbun, June 5, 1959.)

PLANS TO ADVERTISE CANNED
FISH IN FOREIGN COUNTRIES:

The Japanese have revealed a number of plans to advertise canned fish in foreign countries in order to increase consumption in markets abroad. The advertising plans were announced by the Japan Export Trade Research Organization after it consulted with the packers and canners.

To advertise canned mackerel-pike, a motion picture costing \$11,000 (about \$5,500 is to be provided by the Japanese Government) is planned. In addition, it is planned to spend about \$4,100 in Canada to advertise on television.

For canned sardines, a \$972,000 advertising program in Philippine newspapers was announced.

Ads in the British periodical Economist for canned crab, salmon, trout, and tuna are planned, costing about \$500.

Funds for the promotion programs announced will be supplied by the packers' associations and the Government. In addition, the use of signs and posters is also under discussion.

Advertising of canned tuna in the United States market was also announced. About \$140,000 will be used for ads in newspapers and magazines. In 1958 a joint Japanese-United States advertising program had been planned, but agreement was never reached. Therefore, the money not used was carried over for this year's advertising program, with the addition of funds provided by the tuna canning and freezing industries in Japan, and the Japanese Government.

Japan (Contd.):

PLANS INDEFINITE FOR ADVERTISING TUNA IN THE UNITED STATES:

Advertising Japanese tuna in the United States has been planned with a fund of 50 million yen (approximately US\$140,000), including money carried over from last year. However, exporters of canned and frozen tuna have been unable to agree on the manner in which the advertising is to be handled. Plans for the campaign are at present being examined by representatives of the canning and freezing industries, together with the Japanese Fisheries Agency and the International Tuna Council, but because the industry is faced with serious problems as a result of the poor summer albacore season, the planning temporarily is at a standstill.

As a result, the initial policy, which was to advertise during the summer and the Lenten season, broke down, and because there is a lag of about two months between the ordering of advertising and its appearance, it looks very much as if the advertising will appear after September, at the earliest. The plans have been somewhat modified from those submitted earlier by the International Tuna Council and those concerned were hoping for a final decision before the end of June. Cannerymen have been maintaining that the campaign should emphasize tuna in brine, while freezers have been in favor of advertising which would also indirectly benefit tuna canned in oil. (Suisan Keizai Shimbun, June 11, 1959.)

STUDIES ON MARKETING OF CERTAIN FISHERY PRODUCTS IN UNITED STATES PLANNED:

The Japan Export Trade Promotion Organization has budgeted US\$6,000 for the coming year for studies of the possibility of marketing canned saury or mackerel-pike in the United States, for investigation of the organizational connections of the movements to restrict Japanese canned oyster imports, and for a canned crab market survey. Personnel stationed in the United States will shortly receive instructions to carry out these studies as follows:

Canned mackerel-pike survey, \$1,000 budgeted. At present in the southern part of the United States some low-income groups are consuming canned jack mackerel, mackerel, and sardines. In order to predict the possibility of substituting Japanese canned mackerel-pike, which is as yet unknown in that area, samples will be shipped to representative cities of the State of Mississippi to canned goods wholesalers and retailers, housewives, and newspaper and magazine reporters, and the following points will be investigated: (1) sales possibilities; (2) suitability of tomato sauce, oil, or water pack; (3) suitable sizes of cans for each pack; (4) suitability of the prices; (5) taste acceptance.

Canned oyster survey, \$3,000 budgeted. The background of the recent movement to restrict Japanese imports--that is, falling production and rising prices in the East Coast area--will be analyzed, and the following will be studied: (1) annual production by types of goods in the United States; (2) imports by country of origin and type; (3) comparison of prices of Japanese and American goods; (4) prices and commissions in the distribution process; (5) present tariff conditions; (6) consumption of boiled oysters; (7) demand for seed oysters on the Atlantic and Gulf coasts; (8) supply and demand prospects for raw and canned oysters by areas; (9) distribution by states of oyster growers, importers, and cannerymen.

Frozen and canned tuna, \$5,000 budgeted. For survey of quantities of frozen and canned tuna exported, distribution routes, quality, advertising methods, and consumer capacity. Also canned tuna production in countries exporting to the United States, particularly methods of obtaining raw material, production capacity, and statistics (Suisan Keizai Shimbun, June 20, 1959).

NEW TUNA LONG-LINER COMPLETED:

The largest privately-owned high-seas tuna fishing vessel in Fukushima Prefecture was completed early in June. It is the tuna long-liner No. 18 Seisho Maru (239 tons gross). This vessel, which carries a crew of 28, was built by the Yamashita Shipyard of Ishinomaki at a cost of about 100 million yen (US\$280,000).

Japan (Contd.):

Fukushima Prefecture already had a large prefectural fisheries guidance vessel, the Iwaki Maru (475 tons) and the training ship Fukushima Maru (221 tons); the completion of the No. 18 Seisho Maru brings the number of vessels of over 200 tons gross in the prefecture to four, including one other privately-owned vessel.

The feature of the new vessel is its modern equipment, including radar, loran, directional fish-finder, and electric water temperature thermometer, making it perhaps the best equipped vessel of its type in Japan. The engine is a 550 hp. Diesel with supercharger, and there are two 80 hp. auxiliaries. Fish-carrying capacity is 135 tons, and although it has been considered impossible to equip a vessel of under 350 tons gross with freezing capacity of more than 3.75 tons a day, the builders have managed to put a capacity of $4\frac{1}{2}$ tons into this vessel. Speed is 12 knots, and cruising range is 24,000 miles. The hull is steel, and mostly electrowelded. The vessel is equipped with automatic pilot and remote-steering control. There is a speaker in each compartment of the vessel, and these are wired so that even if the speaker switch is turned off, emergency signals can be broadcast.

The No. 18 Seisho Maru sailed from Ena on June 10, and after calling at Misaki in Kanagawa Prefecture was to proceed on her maiden voyage to fish tuna in the Marshall Islands area.

Last fall the question of the most economical size for tuna boats operating in distant waters was the subject of debate between the vessel operators and the Fisheries Agency. Now such a vessel, a specialized tuna long-liner of the 250-ton class, has been completed. The vessel is the first such tuna long-liner built for a private owner in Fukushima Prefecture.

Since before World War II the Japanese high-seas tuna fishery has flourished, and it has been said that all of the tuna grounds of the Pacific have already been fully developed. It is considered that grounds producing catches of over 2,000 kan (slightly more than 8 short

tons) a day can be found only by going to the Indian Ocean or the Atlantic. On this point, the people responsible for the building of the No. 18 Seisho Maru boast that she is a classic type of a completely economical vessel, which can pay fully on catches of 1,000 kan a day (4 tons) but which can also go to the Atlantic, if necessary.

The No. 18 Seisho Maru is planned primarily for fishing in the equatorial Pacific, around the Marshall and Caroline Islands, and in the Indian Ocean. Her officers consider that she can be operated satisfactorily on catches of around 4 tons a day, taking 35 days of fishing to get a full load and making trips of about 75 days. This figure of 75 days includes 40 days running to and from the grounds. This allows for the vessel's being sent immediately to the Indian Ocean, in case catches on the Pacific grounds fall below 1,000 kan (4 tons) a day. Much attention has been given to electronic instrumentation in order to economize on running expenses in case of shifts from one fishing ground to another.

According to those responsible for the building of the vessel, the initial plan was to build a boat of the 350-ton class, but after calculating the operating expenses and estimated catch of such a vessel, it appeared that a minimum daily catch of 1,500 kan (about 6 short tons) would be necessary. This wasn't possible because in the principal tuna grounds of the equatorial Pacific, catches of over 1,000 kan a day are exceptional. In order to make catches of 1,500 kan regularly, it is necessary to go to the Indian Ocean or the Atlantic. Therefore, it was decided to build a vessel of the 250-ton class, which could operate quite profitably on catches of 1,000 kan a day. As a means of raising efficiency and saving fuel while running at night or in fog or squally weather, radar and loran were installed. The loran receiver will enable the captain to record accurately the position of good fishing grounds, so that they can be found again without fuel-consuming searching. The vessel's communications equipment includes a 250-watt, 22 MC main transmitter which will enable her to communicate satisfactorily with her base in Japan

Japan (Contd.):

from as far away as the South American coast. (Suisan Keizai Shimbun, June 12 and 14.)

COMPANY EXPANDS TUNA FISHING FLEET:

A Japanese fishing company has already built two tuna fishing vessels (No. 1 Kaki Maru and No. 2 Kaki Maru), each of 380 tons gross. Now the company's No. 3 Kaki Maru, 450 tons gross, has recently been completed by the Miho Shipyard at Shimizu, and was to be launched on June 2.

This Japanese company plans to put more and more of its efforts into tuna fishing in distant waters, and plans to build two more tuna boats. The No. 3 Kaki Maru cost 160 million yen (about US\$448,000) to build. The new vessel was expected to sail for the Atlantic early in July, and it is planned that she will make about five trips a year. (Nikkan Suisan Tsushin, June 1, 1959.)

LOANS FOR CONSTRUCTION OF FISHING VESSELS IN 1958:

Loans from the Japanese Government's Agriculture, Forestry, and Fisheries Fund for vessel construction in 1958 were as follows: for large tuna boats, 18 loans totaling 641 million yen (US\$1,781,000); for medium tuna boats, 68 loans totaling 774 million yen (US\$2,150,000); for East China sea trawlers, 19 loans totaling 550 million yen (US\$1,528,000); for medium sized home-waters trawlers, 30 loans totaling 300 million yen (US\$833,000); for seiners, 13 loans totaling 160 million yen (US\$444,000); for salmon driftnetters, 41 loans totaling 410 million yen (US\$1,139,000). Loans for medium-sized tuna boats (40-100 tons gross) were up 390 million yen (US\$1,083,000), more than double the 1957 figure (Suisan Keizai Shimbun, June 21, 1959.)

SECOND TUNA VESSEL FOR THE SOVIET UNION COMPLETED:

A Japanese shipyard recently completed the second of two tuna vessels

for the Soviet Union. Delivery was scheduled to take place on June 14. The 500-gross-ton vessel will be towed to Vladivostok by a Soviet freighter.

The same shipbuilding company that built the two tuna vessels also worked on two herring factoryships of 4,900 dead-weight tons for the U.S.S.R. Refrigeration machinery for the tuna and herring vessels has been ordered from a Japanese company of Osaka at a cost of about 300 million yen (US\$833,000). This is the first such large order from the U.S.S.R. Delivery was scheduled for the end of August.

The equipment for each tuna vessel will be two ammonia machines of 40 horsepower (one for freezing and one for precooling) with a daily refrigeration capacity of 120 tons. The herring vessels will have four air-cooling machines, and five (for each vessel) 50-horsepower freon freezing machines, plus two 7.5 horsepower freezing machines for keeping stores. With this equipment, the temperature throughout each herring factoryship can be suitably regulated. (Nikkan Suisan Tsushin, June 4 and 10, 1959.)

TUNA FISHERMEN'S FEDERATION OPPOSES REDEPLOYMENT OF SALMON FISHERMEN:

Because the Japanese North Pacific salmon fishery is being restricted more and more each year, the Japanese Federation of Salmon Fishermen has been pushing a plan to redeploy part of the salmon fishermen into tuna fishing. The Japan Tuna Fishermen's Federation met on June 11, 1959, with newsmen to explain that they had decided on absolute opposition to any redeployment of surplus salmon fishermen into the tuna fishery because of present trends in the tuna resources and because of the present economic conditions in the fishery. The main points were as follows:

The salmon fishermen's federation has asked the tuna fishermen's cooperation in arranging for excess salmon fishermen to enter the tuna fishery with 20 or 30 tuna boats of the 250-ton class, as part of a comprehensive plan for reorganizing the salmon fishery. In view of

Japan (Contd.):

the trends of the tuna resources and the present economic conditions in this fishery the tuna fishermen believe it is unreasonable to redeploy more fishermen into it from other fisheries.

The salmon fishermen's group has suggested, as a method of handling this proposed redeployment, that there are now 46 research ships and school ships belonging to local governments and that as the operations of these vessels are having bad effects on the economy of the tuna fishery, they should be done away with, thus making room for the entry of the salmon fishermen into the tuna fishery with 20 or 30 vessels. The Tuna Fishermen's Federation cannot understand the thinking behind this proposed exchange.

The reason behind the idea of supplanting research and training vessels with commercial tuna boats operated by former salmon fishermen, as proposed by the Salmon Fishermen's Federation, is the contention that these research boats and school ships are tending to neglect their proper function of surveying the resources and are operating commercially, thus having a bad effect on the economy of the tuna fishing industry. The tuna fishermen's group also took up this problem at its 1956 general meeting, and passed a resolution asking that more circumspection be exercised in the operations of the research and training ships. The tuna fishermen now say, however, that although they are not satisfied with the present state of those vessels' operations, the situation is improving under the guidance of the Fisheries Agency. It is not impossible that in the future the tuna fisheries will come under some sort of international restrictions, like those involved in Japan-China and Japan-U.S.S.R. fishery agreements, and in such a case the research vessels will be needed for research on the tuna resources. For these two reasons, the tuna federation is unable to accept the salmon fishermen's reasoning. (*Nippon Suisan Shim-bun*, June 15, 1959.)

DISPOSAL OF FOUR SALMON FLEETS CONSIDERED:

In connection with reorganization of the North Pacific mothership salmon fishery, the Japan Federation of Salmon Fishermen has been asking for compensation (3 million yen, about US\$8,300) for anticipated operating losses this year. At the same time, considering that it will be necessary to reduce the salmon fleet by 120-130 boats, the Federation wants 60 of these boats shifted into the gill-net salmon fishery south of the Japanese-Russian treaty area and the rest either absorbed into the tuna fishery or compensated for leaving the salmon fishery on the same terms as applied in last year's reduction of the salmon fleet. The Japan Federation of Tuna Fishermen is diametrically opposed to the salmon fishermen's proposal. The Japanese Fisheries Agency has set up a preliminary plan for the reduction of the salmon fleet and is considering it in consultation with officers of the Salmon Fishermen's Federation.

The preliminary plan was completed on June 2, 1959, but is still in draft form. It is based on a policy of cutting out four fleets and 120 catcher boats, by one of two methods. The reduction could be made on the basis of the Law for the Protection of Fishery Resources (18 million yen or about US\$50,000 compensation, two-thirds subsidy, and payment of interest), or by the formation by the vessel owners, after return from the fishing grounds, of an Adjustment Association for handling both temporary and permanent retirement from the fishery (2-3 million yen or US\$5,500-\$8,300 for temporary retirement, 18 million yen or US\$50,000 for permanent retirement, two-thirds subsidy, and payment of interest). However, the Fisheries Agency plan is not being met with great favor as it does not completely satisfy the basic principle of the reorganization, which is that from next year forward both the motherships and the catcher boats are to be put into a position where they can operate without financial loss. (*Nikkan Suisan Tsushin*, June 19, 1959.)

Japan (Contd.):

NORTH PACIFIC SALMON FISHING FIRMS APPLY FOR PERMITS TO FISH FOR TUNA IN FIJI ISLANDS AREA:

A Japanese fishing company is planning to send out a tuna mothership fleet this year. Because of the declining trend of the North Pacific salmon fishery, on which it has largely depended, and the increasing demand for tuna for fish ham and sausage. Application for a license was to be made to the Japanese Fisheries Agency as soon as preparations were completed.

The fleet, comprising one mothership and about 40 salmon catcher boats, was to sail early in September and operate in the Fiji Islands area until the end of the year. For a mothership the firm will either convert one of its salmon factory-ships or charter the Kyokuzan Maru from a Japanese whaling company. The use of salmon boats in the fleet is not settled as special permits will have to be sought. It is reported that the authorities' policy will be to license this proposed operation because the company has a prior record of participation in the tuna mothership fishery.

According to plans, the company will utilize the production record of another company, which caught about 2,000 short tons of fish in 1954. The production goal for the new fleet will be over 4,000 metric tons, and except for the products for export, most of the catch will be used at the company's plant for fish sausage and ham.

Another Japanese company has recently revealed its plans to engage in mothership-type tuna fishing this year. According to the announcement, the mothership will be the 7,200-ton Jinyo Maru, which is at present engaged in the North Pacific salmon fishery. The fleet will comprise 10 regular tuna boats, 40 salmon boats with part-time tuna licenses, and 2 carriers. Fishing will be done around the Fiji Islands from early September to mid-December. The catch goal will be 6,270 tons of tuna and other fish. (Suisan Keizai Shimbun, June 20, 1959.)

PRICE OF TUNA FISHING RIGHTS RISING STEEPLY:

Because of the curtailment in the Japanese North Pacific salmon fishery, movements for shifting into the tuna fishery or for obtaining part-time tuna fishing licenses for salmon boats have become very active. In addition, the big fishing companies are buying up tuna fishing rights. As a result the price of those rights has recently risen sharply. In the case of full-time tuna fishing licenses, the price hitherto has been 70,000 to 80,000 yen per ton (\$196 to \$224 per ton) based on the gross tonnage of the vessel, but this has now risen to 120,000 yen (\$336). Part-time tuna fishing license rights have doubled in value, from \$5,600 to over \$10,000. It appears that this rising market will continue.

Since the Japanese Government is not granting any new tuna fishing licenses, the only way to secure replacement tonnage and build a new boat is to buy out the tonnage of someone who already holds a license. (Nikkan Suisan Tsushin, June 5, 1959.)

JAPANESE-MOROCCAN COMPANY TO TRAWL FOR SHRIMP AND BOTTOM FISH IN SOUTH ATLANTIC:

A large Japanese company has formed a joint enterprise (capitalized at 30 million yen, about US\$83,000) on a 2½-year contract with Moroccan interests to trawl for shrimp and bottom fish in the South Atlantic. The vessel which is to do the fishing, the 499-ton No. 16 Taiyo Maru, with a crew of 21, sailed from Shimonoseki on June 15 for Morocco via Capetown. At the request of the Moroccan Government, seven Moroccans will be taken aboard the ship for training. If the venture is successful, the Japanese company will send another trawler to the Tangiers base within the year. Plans call for annual landings of about 1,500 tons of snapper and cod, to be sold through an Italian firm. (Nikkan Suisan Tsushin, June 18, 1959.)

MORE JAPANESE FISHING TRAWLERS TO OPERATE OFF NORTHWEST AFRICAN COAST:

A Japanese fishing company was due to send the trawler Uji Maru (536 gross

Japan (Contd.):

tons, 900 hp. and 10 tons freezing capacity) early in July to Piraeus, Greece, where she will be based for trawling operations off Northwest Africa for two years. Plans envisage 40-day trips producing about 180-200 metric tons of bottom fish. This vessel will land its catches in Greece for consumption in that country.

A second Japanese trawler (Tatsuta Maru, 543 tons gross) that has been fishing in the Persian Gulf out of Abadan, Iran, left Abadan for Greece about the middle of June. This vessel, under a one-year contract to a Greek firm, will also fish off the Northwest African coast.

The Japanese vessels are expecting to sell their catches at US\$225-280 a metric ton, about the same price for similar fish in Japan.

SWISS ASK FOR TECHNICAL COOPERATION TO PRODUCE TUNA PRODUCTS:

A firm established in Boston in January 1957 by a large Japanese company primarily to process tuna products (tuna franks, smoked loins, etc.) has aroused interest in Europe. Recently Swiss and British interests have approached the same Japanese company that set up the Boston firm for business arrangements similar to the Boston formula. The Swiss are particularly interested, and the Japanese company will shortly detail an investigator from Boston to Switzerland to consider concrete plans. The Swiss request is for tuna-processing facilities and technical guidance. It is thought that if this plan materializes, it will naturally be necessary to operate tuna vessels in order to assure the supply of raw material. (Nikkan Suisan Tsushin, June 18, 1959.)

NEW TUNA VESSEL TO FISH IN INDIAN OCEAN:

A Japanese company's new tuna vessel Horyu Maru sailed on June 18 from Misaki for her maiden voyage to the Indian Ocean fishing grounds. The vessel

which will be at sea about 75 days, was completed June 12. It is 36.4 meters (119 feet) long and her gross tonnage is 238. Fish hold capacity is 230 cubic meters and fuel tank capacity is 140 cubic meters. A 650-horsepower supercharged Diesel pushes her at 11.6 knots maximum. The vessel has two ammonia compressors, one of 23.5 refrigeration tons and the other of 19.2 tons. She is equipped with radar, radiodirection finder, and radio buoys. (Suisan Keizai Shimbun, June 19, 1959.)

BERING SEA TRAWLER ACTIVITY INCREASING:

The Japanese Fisheries Agency, after careful study, has decided to license a second Bering Sea fish-meal fleet, to be operated jointly by two fishing companies. The factoryship Tenyo Maru (11,000 tons), with 20 trawlers, sailed for the fishing grounds on June 19, where she will join another fleet, which pioneered this type of operation in 1958. The two fleets are expected to produce a total of 21,500 metric tons of fish meal and 3,800 tons of fish solubles, as well as large quantities of liver and body oils and frozen products. The Fisheries Agency has been taking a cautious attitude toward any rapid expansion of this new fishery, but the entry of large Soviet fleets into the grounds and the consequent need for Japan to stake a large and early claim on the resource are reported to have been factors influencing the granting of the new license.

According to plans, the Tenyo Maru will produce 8,000 tons of meal, 250 tons of liver oil, 1,500 tons of fish solubles, and 500 tons of fish oil and will return at the end of November.

The company operating the original fish-meal enterprise in the Bering Sea finally is making money at it. This first fish-meal factoryship fleet is expected to produce 13,500 tons of meal, 400 tons of liver oil, 2,300 tons of solubles, 800 tons of body oil, and 4,250 tons of frozen products.

Large trawlers producing frozen flatfish have also been active lately in the Bering Sea. The 1,489-ton No. 51 Taiyo Maru left the fishing grounds June 7 with

Japan (Contd.):

about 1,000 tons of frozen sole, and a second 993-ton trawler Asama Maru arrived in Nagoya on June 14 with 612 tons of frozen sole produced in Bristol Bay since May 12. The demand for frozen flatfish has been strong in Japan in recent years, and current prices are reportedly 10 to 20 percent above last year.

The Asama Maru reported working for about one week in company with a large Soviet fleet in Bristol Bay. The Russian fleet appeared to include two 7,000-ton tenders, two 2,000-ton stern trawlers, and about 30 trawlers of over 200 tons.

As usual, the Japanese were struck with the presence of women aboard the Soviet vessels. It appeared to the Asama Maru's fishermen that the Soviet nets were small and that their trawling techniques were not very advanced. The Japanese reported that the Russians played music and waved in a very friendly fashion when Japanese boats approached. (United States Embassy in Tokyo, June 19, 1959.)

CANNED FISH TO BE INCLUDED AGAIN IN BURMA REPARATIONS:

It has been reported that the Burmese Government is seeking to have canned fish included in reparations goods this year for the third year. The Japanese Fisheries Agency, Foreign Ministry, and Ministry of International Trade are agreeable if the quantity is about half of that supplied last year and the year before. Chances are good that the matter will be decided as soon as a formal request is received from the Government of Burma.

The problem is obtaining agreement between the sardine and mackerel-pike export packers. Last year the whole amount was mackerel-pike, whereas the year before it was half mackerel-pike and half sardine. The sardine export packers association is determined to supply at least half of the shipments this year. Although the current price of sardines is slightly higher than that of mackerel-pike, it is thought that the Burmese can be induced to accept sardines if the

Japanese can settle their differences.

The mackerel-pike canners do not think, however, that the sardine canners will get half of the order, in view of the price differential and that the entire quantity should be mackerel-pike, if the Burmese so desire. The mackerel-pike canners are already counting on filling the whole 40,000-case quota with mackerel-pike. (Nikkan Suisan Tsushin, June 5, 1959.)

TRADING COMPANIES OPPOSE RAINBOW TROUT CONTROL SYSTEM:

The large Japanese company, which handles more than half of all rainbow trout exports to the United States, early in June called together representatives of seven trading companies to get their opinions on the problems of controlling trout exports and to make a start toward stabilizing prices. None of the seven companies showed any positive interest in such controls.

Because of excessive inventories and strong competition from Danish fish, the export price of rainbow trout is at the low level of 32-33 U. S. cents c.i.f. United States. The large Japanese company wants to stabilize the market through an export-control formula, but the other traders are opposed on the grounds that unless the present situation of overproduction is fundamentally corrected, such measures will be ineffective; unless overproduction is corrected, measures should be taken to increase exports rather than to restrain them; if Japan imposes quantitative restrictions, only Denmark will benefit. (Nikkan Suisan Tsushin, June 9, 1959.)

SURVEY OF EARNINGS BY JAPANESE FISHERMEN:

The Japanese Shizuoka Prefecture Federation of Fishermen's Credit Cooperatives has recently made a survey of the income of 21,097 fishermen's families belonging to 70 cooperative associations in the Prefecture. It found that the average annual income per family was 619,000 yen (US\$1,733), of which 85.2 percent was from fishing and 14.8 percent from other activities, such as farming, home crafts, or day labor. Of this gross income, on

Japan (Contd.):

the average, 51.2 percent was spent for expenses directly related to fishing and 39.2 percent for living expenses.

Average expenditures for living expenses per family were 242,000 yen (US\$677), as compared with a figure of 382,000 yen (US\$1,070) found in a recent survey of urban workers' families, but it was believed that fishermen's families receive a considerable unrecorded income in the form of goods. The Shizuoka fisherfolk were found to save on the average 0.6 percent of their income.

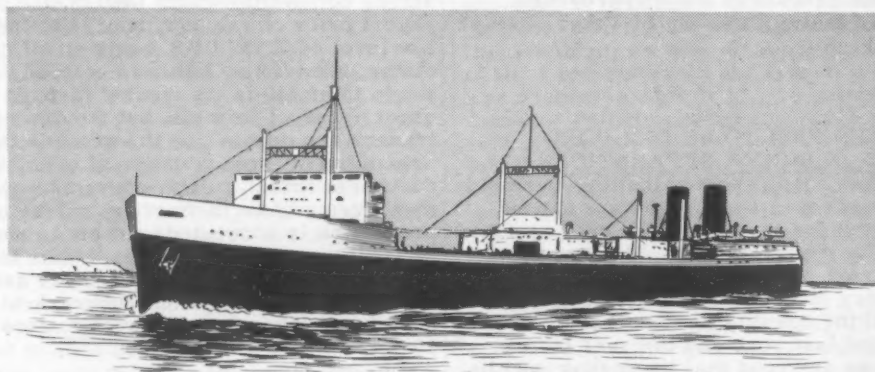
Shizuoka ranks fourth among the prefectures of Japan in total landings and is the leading prefecture for tuna landings (Suisan Keizai Shimbun, June 14, 1959).

NORTH PACIFIC WHALING TRENDS:

The Japanese North Pacific factory-ship whaling season has started off well

Another sperm whale fleet, with a 1,300 head catch limit, had taken 402 whales to June 15. This is an average catch per day of 21 whales, as compared with last year's average of 23 per day. The industry has been seeking an increase in the sperm whale catch limit, and the fisheries trade press reports that the Japanese Fisheries Agency has decided to raise the limit from 1,500 head to 1,800 head, on condition that the industry accept a limitation of the coastal sperm whale catch to 2,000 head, as the Agency considers that both fisheries are exploiting the same stock of whales.

Coastal whaling from land stations in northeastern Japan is reported very good this year, with a total of 720 head taken since January 1 by the five companies engaged in whaling. Of this catch, 383 are sei whales, 322 sperm whales, 13 fin whales, and 2 blue whales. Sei whale abundance is said to be the highest in 15 years. The whalers think that the whales appearing off northeastern Japan this year are not of the Bonin Islands stock, as the



Japanese Antarctic Whaling Mothership

for the baleen whale fleet, but sperm whale catches are running slightly behind last year. One of the whaling fleets, which began whaling on May 28, had taken up to June 15 a total of 222 blue-whale units, 87 more than last year at the same period. Humpback whales are reported especially abundant, and are averaging 62.26 feet long, as compared with 61 feet last season. This fleet expected to reach its catch limit of 800 blue-whale units by mid-August, at the latest.

grounds, which ordinarily would be about 270 miles off the coast at this season, are still within 200 miles of shore, the United States Embassy in Tokyo reported on June 19, 1959.

FISHERY NOTES FROM TRADE PRESS IN JUNE:

A cold storage plant for tuna is to be set up in Ceylon by a Japanese-Ceylonese company.

Japan (Contd.):

The Japanese Maritime Safety Board arrested 27 vessels in April and May for unlicensed tuna fishing.

Taiwan is negotiating with the United States Government for a loan to build 4 to 6 refrigerated tuna fishing boats of 200-300 tons.

The Japanese Export Tuna Canners Association has asked the Fisheries Agency to clamp down on direct exports of tuna to Cuba, transshipments from the Atlantic to the United States, and plans for canning tuna in Malaya, and has asked the Government to negotiate with the United States to set up a special Japanese quota within the United States canned-tuna-in-brine import "global quota."

AGAR-AGAR INDUSTRY TRENDS:

Prices in June 1959 on the international market for agar-agar continued high as the supply was short because of poor

Table 1 - Japanese Agar Production, 1956-1959			
Year	Natural Agar	Factory Agar	Total
	(1,000 Lbs.)		
1959	3,670	800	4,466
1958	3,666	550	4,511
1957	3,961	650	4,038
1956	3,388	n.a.	n.a.

n.a.=not yet available.

production in Japan and Korea. Last year's warm winter in those two countries, which are producers of natural agar for export, has a strongly adverse effect on production. In the case of Japan, the unusually warm weather during the producing season, which extends from December to March, resulted in the production of considerable poor quality agar. As a result, total production in the 1958/59 season was only 1,664 metric tons, 20 percent less than the planned 1,910 tons. Korea also had a warm winter, and according to trading company sources, that country's production, which in the past has been about 800,000 pounds, was only 300,000-400,000 pounds. Because of this marked drop in production, the price of natural agar, which had been as low as US\$1.15 a pound f.o.b. around the first of the year, rose sharply after the first of

March and is now around US\$1.45 per pound f.o.b. Japan.

The Ministry of International Trade and Industry announced on May 28 that \$400,000 in foreign exchange would be allocated for the importation of about 330,000 pounds of Korean agar. Applications for foreign exchange were accepted up to June 1, and qualifications for applicants were: (1) Those who have exported \$200,000 or more worth of agar between January 1, 1957, and the end of December 1958. (2) Those who imported at least \$50,000 worth of agar during the same period. (3) Those who will reprocess the imported agar into powder and re-export it.

Before World War II agar was exported to many countries of the world as a special product of Japan. Because the price of gelidium seaweed rose since the war, and because some of the former importing countries started producing agar during the war when Japanese exports were cut off, exports from Japan have been declining year by year.

Therefore, in recent years Japan has been importing comparatively cheap agar from Korea, reprocessing it, and re-exporting it, as a policy designed to keep export markets. If exports die out, large quantities of agar will be thrown on the domestic market, leading to a drop in price, and the policy is also intended to prevent this. Hitherto the re-export trade has been carried on by sorting and fixing up the Korean agar in bonded warehouses, without paying duty, but because this has led to problems of quality, study is being given to mixing the imported agar with some quantity of domestic material and re-exporting it in powdered form. For this purpose \$50,000 was added to this year's allocation as an experimental quota. (Suisan Keizai Shimibun, May 29, 1959.)



Korea

SHRIMP PRODUCTION AND FOREIGN TRADE:

Landings of shrimp in Korea in 1958 amounted to 35.9 million pounds, valued at 746.6 million hwan (US\$1.3 million), a drop of 20.7 million pounds from the preceding year, but about the same as the average (33.0 million pounds) for the three-year period 1954-1956. About 70 percent of the landings consist of shrimp over 200 count

Korea (Contd.):

Table 1 - Korea's Landings of Shrimp and Exports of Dried Shrimp, 1954-1958

Year	Landings		Exports	
	1,000 Lbs.	US\$ 1,000	1,000 Lbs.	US\$ 1,000
1958	3,592	1,493	21	13
1957	5,658	1,686	701	90
1956	3,786	1,451	30	17
1955	3,113	935	168	51
1954	3,049	935	190	59

Note: Values converted at rate of 500 hwan equal US\$1.

to the pound (1/4-inch in length), 20 percent shrimp 100-200 per pound, and the balance less than 100 shrimp to the pound. The smallest shrimp are brined and dried for the domestic trade and for export. Only those shrimp of the size 100 count or less are frozen for export.

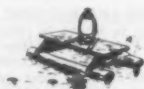
Exports up to 1958 were practically all dried shrimp, except for some shipments (48 tons in 1954) of fresh shrimp to Japan. Although no data on fresh shrimp shipments have been maintained since 1954, it is believed this small-scale trade continues. The exports of dried shrimp between 1954 and 1958 varied between a high of 318 metric tons in 1957 to a low of 9.5 tons in 1958. In 1958, the first shipments of frozen shrimp were made to the United States--129,000 pounds valued at US\$73,400. In the first three months of 1959, 18,000 pounds of frozen shrimp were exported and it is estimated that shipments through April 1959 totaled 30,000 pounds. The development of a frozen shrimp export trade has been aided by the United States International Cooperation Administration Mission to Korea.

The United States is the only country to which Korea ships frozen shrimp. (United States Embassy in Seoul, June 5, 1959.)

UNITED STATES LOAN FOR SMALL BUSINESS INCLUDES FISHING INDUSTRY:

The United States Government on July 9, 1959, announced that the Development Loan Fund has given basic approval and commitment of funds for a loan of US\$5 million to the Korea Reconstruction Bank, owned by the Government of Korea, to help finance loans to small private enterprises for the foreign exchange costs of machinery, equipment, and services. Details of the loan agreement are to be negotiated.

Fishing is included among the principal industries which the Bank expects to help with the funds.



Mexico

MERIDA SHRIMP FISHERY TRENDS, JUNE 1959:

The financial crisis which the shrimp industry of the Campeche area faced at the end of the first quarter of 1959 has been partially, but not totally, relieved. The relief came primarily from the lifting of the three-months ban on the catching of white shrimp. Since the ban was lifted on June 1, 1959, production, while not spectacular, has been better than the average for the previous six months. If the present volume of production should continue, it would go far in relieving the indebtedness which has been crippling the boat owners.

Financial help has been sought from the Nacional Financiera in Mexico City which sent a representative to study financial conditions. The press reported that the representative left Campeche with a favorable report and that he indicated that the loans, totaling five million pesos (US\$400,000), requested by the Campeche boat owners, would probably be granted, the United States Consul in Merida reported on June 30, 1959.

NEW FISH MEAL PLANT ESTABLISHED IN CARMEN:

A fish meal plant has been completed in Carmen and the latest modern equipment has been installed. The plant has purchased two fishing boats and expects to catch at least 80 tons of fish a day--the minimum needed to break even. Surveys conducted in the area with the help of experts from the United States indicate that this quantity of fish is available. The plant's operations, however, are bogged down at the moment by Government red tape regarding the registration of the boats and import tariffs on them (United States Consulate in Merida, June 30, 1959).



Morocco

SARDINE VESSELS STOP FISHING:

The owners of the Moroccan sardine fishing fleet of Safi on June 11 stopped

Morocco (Contd.):

sending out their vessels to the fishing banks. They gave two reasons for their action. First, the sardine canneries have practically ceased working because of the surplus of unsold sardines on hand, estimated at 1.2 million cases. Second, they claim that the Fisherman's Union (Federation des Marins-Pêcheurs) has insisted on naming the master fisherman on each ship while the owners insist on retaining the right to hire their own masters. The union has denied that it has attempted to name the master fishermen and says this is only an additional excuse for the owners to stop fishing. The number of vessels idle is about 120, employing over 2,500 fishermen. The Minister of Labor is trying personally to solve the work stoppage. One avenue being explored is the possibility of temporary subsidies to canneries, according to a June 18 report from the United States Embassy in Rabat.



Netherlands

FROGMEN STUDY
TRAWL-NET FISHING:

Working with the Netherlands Institute for Fishery Research at Ijmuiden, Dutch frogmen for the first time have observed the reaction of fish along the sea bed as they are caught in the nets of a trawler. The study was carried out on the sea bottom by four amateur frogmen, at a depth of between 50-60 feet, 12 miles northwest of Ijmuiden on the Dutch coast.

The most surprising result of the study, according to the Institute, was the discovery that about 20 percent of the fish caught escape through the meshes when the trawl is drawn up from the sea bed. The frogmen also reported that flatfish did not move until the trawl was only about six inches away and then swam upwards to try to keep ahead of the net. The fish usually gave up this effort after about 30 seconds.

Owing to the success of the tests and the amount of study material produced by them, plans are now being made to train frogmen for work exclusively with the

Institute during which underwater cameras will be used. (United States Embassy at The Hague, June 25, 1959.)



Norway

FISHERIES PROJECT IN
INDIA TO BE CONTINUED:

The Norwegian press on June 1, 1959, reported that the Norwegian Parliament had voted a five million kroner (about US\$700,000) grant for the Indo-Norwegian Fisheries Project in Kerala State near Quilon. This grant is for the year 1959/60. A similar grant of five million kroner was voted this time last year for 1958/59.

A four-hour debate is reported to have preceded the voting, when opposition members spoke against the appropriation. They preferred to cancel the allotment for the fisheries project in Kerala and to increase instead the Norwegian contribution to the United Nations special fund for technical and economic development. The Norwegian Foreign Minister who visited the project in Kerala in November last year stated, according to the press report, that "we cannot let our efforts be transferred to the United Nations organ until our work has reached a conclusion we can be satisfied with."



A prototype boat developed in India by Food and Agriculture Organization naval architects. This boat was developed to replace catamarans, used by thousands of fishermen in India along stretches of surfbeaten coasts with no harbors.

Earlier reports which originated from Oslo and appeared in the local press stated that the Foreign Affairs Committee of the Norwegian Parliament presented a report on the progress of the Project dated May 27, 1959. The Indo-Norwegian Fisheries Project in Kerala, according to

Norway (Contd.):

this report, has achieved "valuable results" in the face of considerable difficulties. There had been success in all sectors of the project: fishing, water supply, and health. But the report also indicated several "setbacks," including a lack of motor boats for inshore fishing and boats built of Norwegian timber were damaged by Marine borers, the United States Consulate in Madras, India, reported on June 15, 1959.



Pakistan

FISHING EQUIPMENT IMPORTED THROUGH COOPERATIVES EXEMPT FROM DUTY AND SALES TAX:

On April 12, 1959, the Pakistan Central Board of Revenue with the sanction of the Central Government in a press release announced the exemption of certain fishing requisites from Customs duty and sales tax if imported through the Karachi Fishermen's Cooperative Purchase and Sale Society, Ltd., Karachi; and in the case of East Pakistan if imported through the Director of Fisheries, East Pakistan.



Dried shark is produced in Pakistan for export to other Oriental countries. Pakistanis prefer fresh fish.

The ad valorem rates of duty normally charged for some of these items (all subject to a ten percent sales tax in addition to duty) are: marine Diesel engines and spare parts, 10 percent; nylon ropes, 30

percent; nylon twine, 37½ percent; coir ropes, 36 percent; fish hooks, 80 percent; spongex floats, 60 percent (from United Kingdom, 50 percent); navigational instruments, 60 percent (from United Kingdom, 50 percent); and lead sinkers, 40 percent.

The Central Board of Revenue, Ministry of Finance, stated that although no official notification regarding exemption from Customs duty on the above items has been issued, executive instructions setting forth the procedures for granting the exemptions have been forwarded to the Customs authorities.

An official of the Pakistan Department of Fisheries stated that the International Cooperation Administration authorities had requested exemption from Customs duty sometime ago. The same official stated that the Karachi Fishermen's Cooperative generally takes care of about 95 percent of the requirements of fishermen in Karachi. This Cooperative generally obtains import licenses on the basis of recommendations made by the Pakistan Central Fisheries Department. For the last three years or so the fishing community has been purchasing its requirements from the Cooperative. While fishing requisites could come in under the operations of the Export Bonus Scheme, such imports, in view of the above executive order granting exemptions, could certainly not compete with the Karachi Fishermen's Cooperative Society.

The same official in the Pakistan Central Fisheries Department stated that they have urged the Central Board of Revenue to grant Customs exemptions for all items imported by the Fisheries Department under the Colombo Plan, ICA assistance program, and other foreign aid programs. (United States Embassy in Karachi, May 15, 1959.)

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FREEZING AND PROCESSING PLANTS BEING BUILT:

Only two firms, both located in Karachi, are now engaged in the export of frozen and canned shrimp. One firm maintains a plant having a freezing capacity of 4½ tons daily, and cold-storage facilities

Pakistan (Contd.):

of 40 tons capacity. The other firm has a freezing capacity of 6 tons daily, and cold-storage facilities of 1,250 tons capacity. Both companies have expressed an interest in expanding their operations through United States investment participation.

Two additional plants, both in Karachi, are scheduled for completion in January 1960. These companies also are interested in American investment participation.



Dried shrimp shells ground and bagged for use as fertilizer. Produced in Pakistan for export to Ceylon.

The Bay of Bengal in East Pakistan reportedly offers an excellent potential for the development of a fishing industry. No freezing and cold-storage plants are operating in East Pakistan at present; however, two are under construction. The first, located at Chalna, will have a freezing capacity of 5 tons daily, and cold-storage facilities of 200 tons capacity. The second, at Chittagong, will be able to freeze $2\frac{1}{2}$ tons daily and store 50 tons.

To encourage the further development of the fishing industry, the Government of Pakistan is prepared to grant certain concessions to investors establishing new enterprises, and/or collaborating with existing firms. Among others, these include loans through the Pakistan Indus-

trial Development Corporation (PIDC) for local construction and other costs, and an export bonus scheme which provides that exporters of frozen or canned fish will be entitled to receive bonus vouchers equivalent to 40 percent of the f.o.b. Karachi value of the exported products. These vouchers may be used toward the import of construction items, machinery, engines, etc. (Foreign Commerce Weekly, June 22, 1959.)



Philippines

CANNED FISH RETAIL AND WHOLESALE PRICES, JUNE 16, 1959:

Retail and wholesale prices on June 16, 1959, for canned sardines and canned salmon in Manila were:

Product	Wholesale US\$/cs.	Retail US\$/can
Canned sardines:	(48 15-oz. cans)	
U. S. brand	12.00-12.625	27.5-32.5
Japan brand	12.00	25.0-30.0
Canned salmon:	(48 16-oz. cans)	
U. S. brand	29.75-30.00	67.5-75.0
Japan brand	29.75-30.00	67.5-75.0

* * * * *

CANNED SARDINE PRICES:

According to a large Philippine trading company, the following informal acceptance of bids on canned sardines was made at the opening of tenders for canned fish by the Philippines purchasing agency on May 8, 1959.

O No. 1 in tomato sauce: Japan, 21,250 cases (\$7.70); U. S., 22,500 cases (\$7.98-8.14); South Africa, 10,000 cases (\$7.60)--total 53,750 cases.

O No. 3 in tomato sauce: Japan, 18,750 cases (\$9.05).

Buffet cans in tomato sauce: Japan 16,124 cases (\$4.25); South Africa, 12,000 cases (\$4.25)--total 28,124 cases.

Small No. 1 cans, tomato sauce: U. S. 3,750 cases (\$7.36); South Africa, 3,750 cases (\$6.60)--total 7,500 cases.

No. 4 cans, natural: U. S., 16,500 cases (\$6.18-\$6.72); South Africa, 3,250 cases (\$5.70)--total 19,750 cases.

Philippines (Contd.):

It appears that as a result of negotiations, the Japanese canned fish bids accepted at the purchase on May 8 have been increased to 23,000 cases each for O No. 1 and No. 3's, and to 19,400 cases for buffet cans. (Nikkan Suisan Tsushin, June 2 & 4, 1959.)



Portugal

CANNED FISH EXPORTS,
JANUARY-MARCH 1959:

Portugal's exports of canned fish during January-March 1959 amounted to 17,018 metric tons (937,000 cases), valued at US\$8.7 million, as compared with 12,000 tons, valued at US\$6.8 million, for the same period in 1958. Sardines in olive oil exported during the first 3 months of 1959 amounted to 12,543 tons, valued at US\$6.2 million.

Table 1 - Portuguese Canned Fish Exports, Jan.-Mar. 1959		
Species	Jan.-Mar. 1959	
	Metric Tons	US\$
Sardines in olive oil	12,543	6,158
Sardine & sardinelike fish in brine . .	509	102
Tuna & tunalike fish in olive oil . . .	609	443
Anchovy fillets	1,593	1,134
Mackerel in olive oil	1,361	664
Other fish	403	154
Total	17,018	8,655

During January-March 1959, the leading canned fish buyer was Germany with 4,114 tons (valued at US\$2.0 million), followed by Italy with 1,984 tons (valued at US\$1.1 million), the United States with 1,527 tons (valued at US\$1.1 million), Great Britain with 1,497 tons (valued at US\$712,000), and Belgium-Luxembourg with 1,471 tons (valued at US\$719,000). Exports to the United States included 803 tons of anchovies, 45 tons of tuna, 645 tons of sardines, and 18 tons of mackerel. (Conservas de Peixe, May 1959.)

CANNED FISH PACK,
JANUARY-MARCH 1959:

The total pack of canned fish for January-March 1959 amounted to 4,286 metric tons as compared with 3,921 tons for the same period in 1958. Canned sardines

Table 1 - Portuguese Canned Fish Pack, Jan.-Mar. 1959		
Product	Metric Tons	1,000 Cases
In olive oil:		
Sardines	1,907	100
Sardinelike fish	4	-
Anchovy fillets	203	7
Tuna	1,829	182
Mackerel	4	-
Other species	340	17
Total	4,287	306
1/Net weight.		

in oil (1,907 tons) accounted for 44.5 percent of the January-March 1959 total pack, lower by 4.4 percent than the pack of 1,994 tons for the same period of 1958, the May 1959 Conservas de Peixe reports.

SARDINE FLEET SAILS AFTER
SETTLEMENT OF CONTRACT DISPUTE:

The Portuguese sardine fishing fleet at Matosinhos put to sea on June 21, 1959, following the settlement on June 20 of a long-standing dispute between the ship owners and fishermen. Under the new agreement the crewmen of the small motor vessels will receive a percentage share of the gross value of the catches based on a sliding scale. The new contract provides that the fishermen will receive a minimum of 32 percent of a fifteen-day catch valued at US\$1,050 or less--the percentage increasing proportionately to a maximum of 40 percent for catches valued at more than US\$7,000.

According to press reports the first day's fishing was successful, fine fish being landed and valued at about US\$20,400. (United States Embassy dispatch from Lisbon, dated June 25, 1959.)



South-West-Africa

FISHERY LANDINGS
AND PRODUCTION, 1958:

During 1958 the fishing industry of South-West Africa generally maintained its catch at the level of previous years. The production of canned fish set a record. Unfavorable weather, however, caused a substantial reduction in the stock of spiny or rock lobster catch, although landings improved considerably in the first months of the present season.

South-West Africa (Contd.):

Table 1 - South-West Africa Landings and Products of Principal Fisheries, 1958					
Fishery	Landings	Products		Produced ^{1/}	
		Frozen	Canned	Fish Meal	Fish Body Oil
	Short Tons	1,000 Lbs.	1,000 Lbs.	Short Tons	Short Tons
1958:					
Pilchard . .	252,556	-	112,845	46,200	11,858
Spiny lobster	4,449	1,777	430	941	-
Snoek . . .	1,682	-	-	-	-
White fish	1,648	-	-	-	-
1957:					
Pilchard . .	250,757	-	85,676	46,768	10,793
Spiny lobster	8,434	1,374	1,808	1,685	-
Snoek . . .	3,125	-	-	-	-
White fish	2,066	-	-	-	-

^{1/} Product weight

(The South African Shipping News and Fishing Industry Review, May 1959.)



Spain

VIGO FISHERIES TRENDS, APRIL-JUNE 1959:

Fish Exchange: Landings of fish in the April-June 1959 quarter at the Vigo Fish Exchange totaled 15,165 metric tons, an increase of 68 tons over the preceding quarter and up 3,002 tons from the same period in 1958. Small hake and horse mackerel were the leading species landed at Vigo Exchange in the April-June 1959 period. The 1959 sardine season opened on April 15 and landings in May amounted to 587 tons as compared with 442 tons in May 1958. However, June 1959 landings were lower by 319 tons from the 524 tons landed in June 1958. The albacore tuna fishing season was off to a good start in June this year with 661 tons sold over the Vigo Exchange--only 169 tons passed through the exchange in June 1958. But low prices for albacore tuna because of light demand were considered too low by the fishermen for profitable fishing. Fishermen are recommending the export of frozen albacore be studied as an alternative to selling to Spanish canners.

The April-June 1959 landings were valued at US\$4,086,000 (at the official rate of US\$1.00=42 pesetas), about 5 percent above the value for the preceding quarter and 30.7 percent higher than for the second quarter of 1958. Albacore ex-

vessel prices averaged 10 U.S. cents a pound in June this year. The much lower ex-vessel price for this June was attributed to the heavy inventory of canned white meat tuna carried over from the 1958 season.

Fish Canning and Processing: Fish bought for canning in April-June this year amounted to 1,656 tons--up 1,073 tons from the January-March 1959 quarter and 300 tons over the same quarter in 1958. The better landings of albacore tuna at lower ex-vessel prices helped the canners off to a good start for the packing of white meat tuna. But, the drop in landings of sardines in June this year was the cause of some worry to the canners. Olive oil was plentiful and reasonably priced, but tinplate stocks were limited to a two months supply as the quarter ended.

Fish Meal: In early April, the Economic Council of the Fisheries Byproducts group of the National Fisheries Syndicate met to discuss the production of fish meal. Because of the continued demand for fish meal, the Council decided that import licenses for fish meal would not be granted until the Syndicate certifies that the national production cannot meet the demand. It is estimated that Spain consumes about 40,000 tons of fish meal yearly while Spanish production is about 30,000 tons. Plant capacity is sufficient to process more than this total, but the supply of raw material is inadequate. In 1958 it was estimated that 2,160 tons of fish meal were imported to partially make up the deficit in the supply of fish meal.

Exports of Canned Fish: Export licenses for exports of canned and salted fish in 1958 totaled 28,320 tons. Important items exported in 1958 included 822 tons of canned sardines in oil, 1,358 tons of canned anchovies in oil, 9,733 tons of salted anchovies, 1,310 tons of canned tuna in oil and brine, 1,526 tons of canned bonito in oil, and 12,200 tons of dried fish. Although exports of all fishery products rose about 25 percent from 1957 to 1958, canned fish exports were lower. The drop in exports of canned fish was due to severe competition from Japan, Portugal, and Yugoslavia, increasing competition from Morocco, and the development of a strong fish canning industry in Peru. Exports of canned albacore to the United

Spain (Contd.):

States were up about 19 percent in 1958 from the preceding year. Cannery were worried about the continuing decline in the exports of anchovies in oil--1958 exports of this item were down 35 percent from the 1956 exports.

In 1958, Italy was Spain's principal customer for canned and dried fishery products with imports of 8,794 tons, followed by the Belgium Congo with 8,043 tons, French East and West Africa 2,379 tons, and Ghana with 1,186 tons. The United States with imports of 1,013 tons was Spain's sixth best customer in a list of about 53 countries that imported canned and dried fish in 1958.

Exports of fishery products other than canned and salted fish (includes live, fresh, frozen, iced, agar-agar, and some by-products) amounted to 1,646 tons in 1958.

Imports of Fishery Products: In 1958 out of a total of 22,520 tons imported under import licenses, 18,346 tons were salt cod, 2,160 tons were fish meal, and 860 tons were fish oil.

The Cannery's Group of the National Fisheries Syndicate, as a result of a study, has recommended the following measures to increase exports:

A. To those countries which have been habitual importers of Spanish canned fish:

(1) Raise the export premium from 8 pesetas to 13 pesetas on the dollar, i.e., 55 pesetas for the dollar.

(2) Eliminate minimum sales prices established by the Government.

(3) Increase foreign reserve holdings of exporters from 20 to 50 percent.

(4) All foreign exchange produced to be converted and carried as a peseta account from which export licenses could be requested.

(5) Automatic concession of licenses by regional delegates of com-

merce with 50 percent of exchange earnings devoted to the needs of the cannery and related industries.

B. Global exports to non-habitual consumers of Spanish-canned fish:

(1) One-time offer to the United States of 30,000-50,000 cases of white meat canned tuna in brine.

(2) Study of similar operations in canned anchovies for export to the United States and canned sardines to eastern Europe.

With the devaluation of the peseta in July, the exporters of canned fish found most of their recommendations automatically accepted. Of course, the processors will have to pay for imports at the devalued rate, but on the whole the devaluation of the peseta should be beneficial to the fish-processing industry.

Fishing Industry Loans: A loan passed in December 1957 contained a provision for granting credits of about 250 million pesetas (about US\$6 million at rate of 42 pesetas equal US\$1) over a three-year period for construction of fishing vessels and loans to processors. No provision was made to implement the loan by establishing the funds needed for the loan program. Another loan has been proposed to establish a credit of 1,000 million pesetas (about US\$23.1 million) for rehabilitation of the fishing fleet over a five-year period. Fishing vessel owners are now pessimistic about the passage of this loan due to the Government's campaign to decrease spending.

Greenland Territorial Waters: Several fishery publications have expressed alarm at the prospects of Denmark extending its territorial waters in Greenland as it did in the Faroe Islands. Because Spanish fishing vessels were shut off from Iceland and the Faroe Islands, they have been concentrating off the shores of Greenland and Newfoundland.



Sweden

LOAN FUND FOR FISHERMEN INCREASED:

The Swedish Riksdag recently made 5 million crowns (US\$965,000) available for loans to fishermen in addition to the 3.8 million crowns (US\$733,000) which have been placed in the loan fund for the present fiscal year.

Special provisions apply regarding the supplementary loans, since these funds have been granted to assist the smaller shipyards specializing in the construction of fishing boats, which otherwise would be without work. Therefore, loans are only granted for the acquisition of, or rebuilding of fishing boats, or for the installation of new motors.

The final regulations governing the loans are not yet available, but it is stated they will include the following terms:

The maximum loan total is SKr. 150,000 (US\$28,950), however, loans for acquisition of new fishing boats may not exceed 80 percent of the purchase price.

The loan is available when the boat has been delivered, rebuilt, or provided with a new engine and when a classification company has furnished a certificate of approval, or when the borrower in some other way presents evidence that the boat is in the condition that was stipulated when the loan was granted.

The loans are free from amortization or interest for two years and must thereafter be repaid within 10 years, with equal payments each year plus interest. Upon the expiration of the interest-free period, interest is paid at the rate of 4.25 percent.

Sureties in the form of mortgages with priority rights shall be executed. With regard to loans granted for acquisition of new fishing boats, the mortgages shall cover at least the amount of the loan granted, while mortgages for loans covering rebuilding of fishing boats or installation of new engines, shall be within 80 percent of the actual value of the boat after the improvement.

The fishing boat shall be insured against partial damage as well as total loss at a value determined by the Fisheries Board. In certain cases the Fisheries Board may authorize the owner to stand a self-risk of 10 percent of the insurance value in case of total loss and 20 percent in case of other damage.

Other terms are as follows:

Extensive alteration of the fishing boat is subject to prior approval by the Fisheries Board.

Sureties shall be valid for the borrower's total obligations against the loan fund.

The Fisheries Board has the right to arrange for a survey or valuation of the boat during the loan period.

Charges for such surveys or valuations, or mortgage arrangement shall be paid by the borrower.

The Fisheries Board shall be informed immediately of any change of the ownership of the boat.

It is the responsibility of the insurance company to give the appropriate governmental authority notice before taking any action to change or cancel the insurance on a boat at the request of the owner.



Tunisia

EIGHT TRAWLERS PURCHASED IN ITALY:

On July 15 the Director of the Tunisian National Office of Fisheries returned from Italy, where he awarded contracts for the building of four modern trawlers which eventually will be operated by the Office of Fisheries. The trawlers are expected to be completed early in 1960. In addition, four second-hand trawlers were bought.

The purchase of the trawlers is part of a United States Overseas Mission-sponsored project for the improvement of the Tunisian fishing fleet. The new

Tunisia (Contd.):

Italian craft will be commanded initially by skilled, foreign (but not necessarily Italian) officers who will teach Tunisian apprentices how to run the vessels. It is estimated that with good maintenance the total annual catch of the four vessels will be about 750 metric tons, which will increase the present total Tunisian trawler catch of 2,500 tons annually by almost a third.

* * * * *

TUNA CANNERY TO REPLACE PORTUGUESE LABOR:

Portuguese labor at the tuna cannery of Sidi Daoud on the northwest shore of the Cap Bon peninsula, Tunisia, will be replaced next year by Tunisian workers, according to the deputy director of the cannery.

The cannery employs between 400 and 500 men and women during the tuna-fishing season which lasts from about May 1 until the middle of July. Until last year about 80 of these workers were Portuguese women whose skill in packing tuna into cans made the payment of their passage from Portugal worthwhile. This year only 20 Portuguese women were employed, and an attempt was made to teach Tunisian women the necessary skills without much success. However, in spite of the amount of fish that may be wasted, the cannery intends to employ only Tunisian women next year.

The cannery also employs two Spanish captains who command the vessels which tow smaller boats out to the tuna traps in the bay of Tunis. They, too, come only for the season, but it is unlikely that they will be replaced by Tunisian captains.

The replacement of Portuguese laborers by Tunisians and the employment of large numbers of workers by this plant, which cans most of the 900 metric tons of raw tuna taken each year in Tunisian waters, is in keeping with Tunisian policy to spread available work as widely as possible. However, wages and a large labor force have priced the products of this plant out of the French market, and sales of canned tuna, tuna roe, and other products now are almost exclusively to

the Tunisian market. The average laborer earns 500 millimes a day (about US\$1.19) and the average fishermen 1,000 millimes (about US\$2.38) a day, according to a United States Embassy dispatch (July 1, 1959) from Tunis.

**Uganda**NYLON NETS AND MECHANIZATION DOUBLE FISH CATCH:

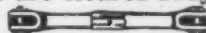
The introduction of nylon nets and out-board motors to the fisheries in the lakes of Uganda, which was started late in 1953, has already resulted in doubling the fish catch, which now amounts to some 48,500 metric tons a year.

"There are now more than 1,200 out-board motors installed in the fishing craft of the Uganda lakes," stated a Food and Agriculture Organization (FAO) expert, when he returned to FAO Headquarters after a year in Uganda surveying the fish marketing situation in the country. "This development has taken place largely as the result of the work of the Uganda Game and Fisheries Department and with no direct financial aid from the Government," he stated.

As a result of the FAO survey, the Government organized eight pilot projects, financed by the African Trade Development Fund. These projects include setting up primary fish markets, retail and wholesale markets with storage facilities, and in three remote places fish storage facilities with a shop attached to each to supply fishermen with equipment and material.

The FAO expert also proposed to the government that "feeder" roads should be built to give access to remote parts of the lakes to open up the fishing. The government has allocated £10,000 (US\$28,000) to build such a road to the southern end of Lake Albert, which is rich in fish.

"I found a flourishing fishery in Uganda," concluded the FAO expert, "and I am sure it will continue to expand rapidly once a few marketing and distribution bottlenecks are cleared away."



Union of South Africa

EXPORTS OF MARINE OILS, 1958:

In 1958 more than 4.2 million Imperial gallons of marine oils were exported by the Union of South Africa. The exports by type of product were as follows: fish-body oil, 3,800,631 gallons; fish-liver oil (includes concentrated oil), 211,587 gallons; whale oil, 211,304 gallons; and other marine-animal oils, 5,043 gallons.



U.S.S.R.

WHALING SUPER-FACTORYSHIP COMPLETED:

According to foreign news reports, the U.S.S.R. has completed the 40,000-ton whaling super-factoryship *Sovietskaya Ukraina* at the port of Nikolaev on the Black Sea. It is further reported that work has begun on a second factoryship of the same tonnage class. (*Nikkan Suisan Tsushin*, June 15, 1959.)



United Kingdom

IMPORTS OF CALIFORNIA CANNED SARDINES OPPOSED BY BRITISH COMMITTEE:

The committee of the Cornwall Sea Fisheries decided during a meeting at Truro, to approach all members of Parliament in Cornwall and ask for their support to stop imports of California canned sardines or pilchards.

The chairman said that the proposed importation might well result "in the extinction of the Cornish pilchard industry." He pointed out that there was already heavy imports of South African canned pilchards coming into the country, tariff free and in unrestricted quantities under Commonwealth preference, and a small yearly quota of £30,000 (US\$84,000) worth was coming from Japan. "Now there is every indication that Californian pilchards are to be allowed into this country. Further imports of foreign canned pilchards can only cause irretrievable damage to the pilchard fishermen of Cornwall, and will also

endanger the possible success of the White Fish Authority's scheme to revive the pilchard industry."

The chairman then went on to say that on one side research into fishing methods was being made, with efforts to improve the industry, which had for a long time been fighting a desperate battle, and on the other, the Government was increasing the competing imports. It did not make sense. He concluded by saying that the California imports could easily undercut the home product in price, and pilchards were the mainstay of the Cornish fishing industry (*Fishing News*, June 5, 1959).

PLAN FOR DEVELOPMENT OF PILCHARD INDUSTRY INITIATED:

Development plans of the British White Fish Authority for the Cornish pilchard industry were set in motion at Truro late in May with the first meeting of the Pilchard Industry Development Management Committee.

Set up by the White Fish Authority, the new committee consists of representatives from the Authority, the Ministry of Agriculture, Fisheries, and Food, Cornwall Sea Fisheries Committee, the fishermen, and canners.

During the meeting, the chairman, who is chief executive of the White Fish Authority, announced that agreement had been reached on a program in outline.

"We think it will enable us to carry out the main objectives of finding out where the pilchards are, when they can be found, and in what quantities, and we have to go on to plan the broad outline of the programme for a development unit for putting the production programme into operation," he said.

The catching and processing vessel would be a multipurpose fishing craft rather larger than the normal fishing boats in order to accommodate the additional scientific gear and extra nets.

Before the next meeting estimates will be drawn up of the capital costs of equipping the development unit, together with

United Kingdom (Contd.):

an estimate of the operation cost. The White Fish Authority, the sponsoring organization, will also make plans on how the money needed will be raised (*Fishing News*, June 5, 1959).

TECHNOLOGIST PREDICTS THAT FUTURE TRAWLERS WILL BE EQUIPPED WITH FREEZERS:

At the open day held at the Scottish Torry Research Station in Aberdeen, Scotland, on June 15, the superintendent of the station said he could see new methods coming along in a few years' time which would solve the problems of glut and scarcity in the fishing industry. With quality control and testing, batch-production techniques would be adopted, and, he said, "even small-scale mechanization might be expected in the treatment of fish."

The most significant proposal in this direction was undoubtedly the development of the "semi-freezer" trawler, in which high speed would be relegated to second place, and the space and capital outlay thus saved devoted to better stowage and more processing plant. In this way the voyage of a trawler of 185-190 feet might be extended by several days, with a higher proportion of better quality fish on landing at the end of the voyage.

Basing the estimates on the Northern Wave experiments of 1956, where it was found that whole headless sea-frozen cod was equal in quality to very fresh iced fish, the sponsors of the scheme conclude that it would still be necessary to stow a considerable proportion--up to two-thirds--of the fish at ice-temperature, because there still would not be sufficient space to freeze the whole catch.

The frozen part of the catch would, on the average, represent the extension of stay on the fishing grounds as compared with the normal voyage, and the iced fish would be equal to the normal catch. The average quality of landings would certainly be higher.

The advantages of this design of trawler are that it is no larger or costlier

than existing vessels and fewer vessels are needed, but the extension of the voyage is moderate, and the thawed fish can be handled by the trade in the same way as iced fish.

Among a number of interesting demonstrations which would be of value in handling the frozen portion of frozen-at-sea fish was one concerned with the thawing-out of frozen fish; a di-electric thawing technique has recently been developed which reduces the thawing time of herring from the present 12 hours to 15 minutes. Large blocks of frozen cod take at present up to three days to thaw, but by the new process complete thawing can be obtained in 75 minutes.

A logical development, using this new technique, would be the establishment of thawing stations in main centers of distribution, such as London, Manchester, and Birmingham, to which hard-frozen fish could be sent for storage and subsequent thawing to provide sea-fresh fish (*Fish Trades Gazette*, June 20, 1959).

TRAWLER OWNERS AGREE TO SUPPLY FISH FOR SOVIET CONTRACT:

The British distant-water trawler owners at Fleetwood, Grimsby, and Hull announced that they have agreed to supply fish to a British processing organization for the execution of a contract signed June 11, 1959, for the delivery to Russia of frozen skinless fish fillets in June, July, and August of this year. The contract, which is subject to production, is for a total of 1,000 metric tons of cod fillets. This contract is equal to one-sixth of the amount sold to the Soviets in 1958. (United States Embassy in London, June 15, 1959.)



Venezuela

ESTIMATED FISHERY LANDINGS AND UTILIZATION, 1958:

Landings of fish and shellfish in Venezuela in 1958 totaled about 80,200 metric tons, of which 69,000 tons were taken in marine waters and 10,300 tons in fresh water. The landings were valued ex-vessel

Venezuela (Contd.):

at about 41.7 bolivars (US\$12.5 million). The marine landings were valued at 36.5 bolivars (US\$11.0 million) and freshwater landings 5.2 bolivars (US\$1.5 million). Included in the total landings for 1958 were 32,800 tons of sardines.

The 1958 landings were utilized as follows: 27,600 tons for fresh fish, 18,100 tons for salted fish, and 34,500 tons for canning.

Processed fishery products in 1958 included 29,900 tons of canned sardines (90.3 million cans), 3,500 tons of canned tuna, 1,100 tons of canned shellfish, and 2,400 tons of fish meal.

SARDINE LANDINGS AND CANNED PACK, 1957:

Landings of sardines in Venezuela for canning increased sharply from 14,136 metric tons in 1956 to 26,861 tons in 1957. The 1957 sardine landings were almost 9,955 tons higher than the 16,906 tons landed for canning in 1956. Sardines are caught throughout the year, but landings are heaviest from December to June and as a rule drop off sharply in the late summer and fall months.

The sardine pack in 1957 amounted to 12,854 tons (82,533,000 cans). In 1957 sardines were packed in can sizes varying from 90-720 grams (3.17-25.40 ozs.), but almost 89 percent of the pack was put up in can sizes varying between 125 to 180 grams (4.41-6.35 ozs.). The most popular can size was 130 grams (4.59 ozs.), which accounted for 29 percent, or 3,695 tons, of the total pack. The next popular can was the 150-gram size (5.29 ozs.) accounting for 28 percent or 3,606 tons, of the total pack. Only about 9 percent, or 1,078 tons, of the 1957 sardine pack was packed in 425- to 454-gram cans (about 1 pound net weight).

OTTER TRAWL GEAR REGULATIONS REVISED:

The Venezuelan Official Gazette (Gaceta Oficial) No. 25977 of June 3, 1959,

carried the following resolution of the Ministry of Agriculture and Husbandry:

"In view of studies realized by the Ministry of Agriculture and Husbandry, it has been observed that fishing by the otter trawl system has been practiced with nets whose mesh does not meet the required size and, contrary to the normal purpose of such nets, there are materials attached to the nets which reduce the selectivity of the net to its smallest form with resulting harm to the marine animal life and the medium in which it lives and, in consequence, goes against norms established for the conservation of live marine resources; this office in accordance with authority invested in it by Articles 1, 2, and 3 and paragraphs c and e of Article 20 of the Fishing Law, by order of the President of the Republic, submits fishing by the system mentioned to the following conditions:

"Article 1 - The mesh of the different bodies or parts of the net should be of the following sizes:

"a. The first part or terminal body of the net, commonly known as top or crown, should be of a mesh of a minimum size of 6 centimeters (2.36 inches), that is, 3 centimeters (1.18 inches) between knots.

"b. The central part or middle body comprising the part between the crown and the cords, boltrope or tassels or the mouth of the net must consist in the top portion of a minimum mesh of 8 centimeters (3.15 inches), that is, 4 centimeters (1.57 inches) between knots in the posterior half and of 10 centimeters (3.94 inches) in the anterior half. For the inferior part of this section or low roof or belly, these sizes are not applicable and will be determined by the judgment of the owner.

"c. The third body or lateral bands at the end called legs, wings, or sleeves, should consist of a minimum mesh of 12 centimeters (4.72 inches), that is 6 centimeters (2.36 inches) between knots.

"Article 2 - It is also prohibited to connect to the net, in any of its parts, any form of material which would have

Venezuela (Contd.):

the end of reducing directly or indirectly the sizes of mesh specified in all paragraphs of Article 1 of this resolution, such as those called "shirts," protective sacks, and similar items.

"Excepted from the provisions of this article is the use of the so-called 'fine-mesh fishing net' which consists of fragment tied to the tassel or low boltrope for the purpose of protection between the cloth of the net and the low roof.

"Article 3 - It is equally forbidden to wrap or tie pieces of chain or other materials not forming part of the structure of the net itself to the low boltrope.

"Article 4 - Likewise, it is prohibited to throw these nets over banks of mother-of-pearl or other mollusks of economic importance.

"Article 5 - It remains the judgment of the Ministry of Agriculture and Husbandry to demarcate the areas in which such practices will be applied but in no case will it be done in the Gulfs of Cariaco, Coro, and Santa Fe or in the lagoons or marshes connecting with the sea.

"Article 6 - Violators of the present resolution will be sanctioned in accordance with the law.

"Article 7 - Thirty (30) days are granted, after publication of this resolution, so that those affected can make the necessary changes in their nets." (United States Embassy in Caracas, June 26, 1959.)



Viet-Nam

NEW SHRIMP FREEZING PLANT TO EXPORT TO THE UNITED STATES:

A Viet-Nameese shrimp fishing company has its new shrimp-freezing plant about completed and production was due to start in July. The plant is located on a waterway (Arroyo Chinois) in the center of the Saigon area. Shrimp caught

off the southern coast of Viet-Nam will be cleaned, quick-frozen, and packaged in wax cartons for shipment to San Francisco. Processing should take only one hour. Arrangements have been made to use a Danish refrigerator ship. Initial production is scheduled to be 600,000 pounds a month.

The shrimp plant operators are expecting a price of about 70 U.S. cents a pound at San Francisco, indicating a gross revenue of US\$420,000 a month foreign exchange, less ocean freight.

The freezing plant benefited by at least US\$50,000 worth of foreign exchange under the Commercial Import Program. shrimp are plentiful, it is believed that this venture has real potential as a most useful foreign exchange earner.

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LANDINGS AND FOREIGN TRADE IN FISHERY PRODUCTS, 1958:

Landings and Outlook: Although no official statistics on the landings of fish and shellfish are available, foreign fishery experts stationed in Viet-Nam estimate the 1958 landings to be close to 110,000 metric tons of marine fish and shellfish and 30,000 tons of fresh-water fish and shellfish. These totals do not include subsistence fishing or fish and shellfish consumed locally, but include only the landings that enter the larger markets. It is estimated that the subsistence fishery catch equals the commercial catch.

It is probable that the commercial catch in 1959 will be larger than in 1958, and that in 1960 it will be much larger. At present the fisheries off the coast of Viet-Nam are relatively unexploited. But now, owing largely to American technical and financial assistance, difficulties of transportation and preservation are being overcome. New fish landing stages (6-8) have been built or are nearing completion, and a satisfactory method of motorizing small bamboo fishing boats has been devised. Production from fresh-water or brackish fish-rearing ponds is steadily increasing. Due to improvement of highways, fresh sea fish are being sold in

Viet-Nam (Contd.):

localities in the highlands which in the past had to depend on salted or canned fish.

Imports: Fish and shellfish imported into Viet-Nam in 1958 amounted to about 5.4 million pounds, valued at US\$430,000 (at official rate of exchange VN\$35 to US\$1). Imports were practically all from Cambodia (4.3 million pounds, valued at US\$252,500) and Japan (1.1 million pounds, valued at US\$167,500). The principal items imported were--1.6 million pounds of fresh pond or river fish and 2.7 million pounds of salted, dried, or smoked fresh-water fish from Cambodia; and about 1.1 million pounds of mollusks from Japan. Imports from countries other than Cambodia and Japan totaled only about 37,000 pounds.

Exports: Exports of fish and shellfish in 1958 totaled 900,000 pounds, with 901,000 pounds exported to Singapore. Only 2,600 pounds were exported to the United States in 1958. Prospects for future exports of fishery products are improving. Exports to Singapore in 1958 were about double those for 1957. With the establishment of a shrimp-processing plant at Saigon, it is likely that exports of shrimp to the United States will become important. As an incentive to exporters, a subsidy of 37 percent by value by making the effective rate of exchange to exporters VN\$48 to the US\$1.

CANNED SARDINE MARKET:

Due to the dollar shortage and surplus of French francs in Viet-Nam, it is unlikely that the modest share of the market for United States sardines held in 1956 can be regained. Viet-Nam is largely self-sufficient in fishery products with an estimated catch of 100,000 metric tons yearly. Fishery products imports are only of marginal importance and it is believed that further exchange restrictions could be imposed by the Government without repercussions.

According to Viet-Nam customs statistics, imports of canned and prepared fish and shellfish of all types amounted to 493 metric tons in 1958, valued at US\$228,428. Local business sources were unable to give the exact percentage of sardines in this total, but it is believed to be over 50 percent. Most imports originate in Morocco and France due, in part, to a multiple exchange rate which has favored imports from the Franc Zone.

At the end of January 1959, visible stocks of imported sardines were estimated at 138 tons, of which 76 tons were on hand, 56 tons in transit, and 6 tons on order. At current consumption levels, this stock was considered sufficient for 8 to 7 months.

The president of the Association of Foodstuff Importers (affiliated with the Chamber of Commerce) estimates annual

consumption of imported canned sardines at 260 metric tons per year.

The c. & f. price of Moroccan sardines has been 4,000-5,000 French francs per case of 100 cans of 175 grams (6.2-ozs.) net. Converted at the official rate of FFr 493.7 to US\$1.00, the landed price has been roughly US\$8.00 to \$10.00 per case. If freight rates of US\$1.30 to \$1.51 per case (conference rates for equivalent cases) are added to the current prices for California sardines, it is likely that California sardines would be competitive on the Viet-Nam market.

The difficulties encountered by United States sardine canners in exporting sardines to Viet-Nam have arisen from the exchange rate in effect for sardines. Canned goods and fish products are not eligible for financing within the framework of the local currency-generating International Cooperation Administration Commercial Import Program, in which the official rate of VN\$35 to US\$1.00 is applicable. The Government has refused to make its own holdings of exchange available at the official rate and has shown no signs of willingness to do so in the foreseeable future. Exchange has been made available only on payment of a surtax of 60 piasters which, when added to the official rate, resulted in an effective rate of 95 piasters to US\$1. On the other hand, the Government was willing to sell nonconvertible French francs with a much lower surtax, making the effective rate only about 65 piasters for one dollar's worth of francs. This policy, which has affected all commodities imported under the high-cost exchange regime, was not prompted by a desire to benefit Franc Zone suppliers over suppliers in the dollar and sterling areas, but rather by the Government's desire to draw down the country's large holdings of nonconvertible francs which have twice been affected by devaluation in the last two years. The end result has been that Moroccan or French sardines which might have sold at the same dollar price have been landed at a piaster cost of at least 30 percent below California or Japanese sardines.

Viet-Nam Fishery Products Imports, 1956-1958						
Country of Origin	Quantity			Value		
	1956	1957	1958	1956	1957	1958
	(Metric Tons)			... (US\$1,000) ...		
Fish (preparations & conserves):						
Morocco	364	230	165	190	136	85
Japan	32	4	159	11	1	61
United States	-	-	43	-	-	18
Cambodia	14	32	25	1	2	3
Hong Kong	-	-	20	-	-	8
France	41	18	11	26	21	9
Sweden	-	-	2	-	-	2
Algeria	-	10	-	-	11	-
Denmark	-	-	1	-	-	1
Total	451	303	426	228	171	187
Shellfish (preparations & conserves)	42	33	57	39	38	63
Other Fishery Products (fresh, salted, dried, smoked, or cooked)	2,446	1,864	1,689	430	271	407

A decision has recently been taken by the Government to eliminate the broken cross-rate in the high-cost exchange regime. Effective May 15, 1959, the surtax on dollar imports was reduced to 50, making an effective rate of 85 piasters to US\$1, and the surtax on francs was increased to make a comparable effective rate for franc imports. While it might logically follow that United States exports would benefit from the new rate, there is no assurance that this will be the case. The Government will probably refuse, as it has often refused in the past, to allocate dollars for imports which can be procured with francs. While formerly it was to the importer's advantage to buy canned sardines in the Franc Zone, now he will probably be forced to whether or not it is to his advantage.

There is one factory producing canned sardines at Phan Thiet, one of the principal fishing ports in Viet-Nam. Ac-

Viet-Nam (Contd.):

According to the owner, annual production ranges from 5,000 to 10,000 cases, all of which is consumed locally. This firm has tentative plans to expand its operations to produce 50,000 cases per year, of which 30,000 would be exported. However, the owner stated that the firm has had difficulty

competing with imports and would need tax concessions on imported raw materials and more protection than has heretofore been afforded by the multiple exchange rate. Whether the recent measure will affect the firm's expansion plans is not known. The Government has shown no signs of encouraging the company, perhaps because it is controlled by Chinese interests, according to a May 18, 1959, dispatch from the United States Embassy in Saigon.



STORAGE EXPERIMENT EXHIBIT AT -20° F., 0° F., +10° F.

At the National Fisheries Institute Convention in April 1959, the NFI Technology Committee experimental exhibit was arranged to permit industry members to determine the effects of storage temperature, packaging methods, and short periods of mishandling on the acceptability of several fishery products. The basic experimental study simply involved storage of packages of seven different products at -20° F., 0° F., and +10° F. for 9 to 10 months.

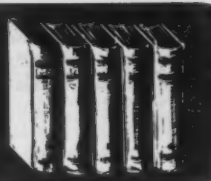
The products were prepared and packaged during June and July, 1958 in accordance with usual commercial practices in fishery plants located in Gloucester, Boston, Bayou La Batre, Astoria, and Vancouver (B.C.). All were prime or at least very good quality raw materials and all were packaged in standard commercial materials. Ocean perch, haddock, halibut, silver salmon, and raw Gulf shrimp were all packed in standard waxed paperboard cartons and overwrapped with waxed bleached sulfite paper. Cooked dungeness crabmeat and cooked Pacific shrimp meat were packed in vacuum sealed cans. The products were frozen on plate freezers or in freezer rooms at -40° F. Each of the products were divided into three lots and stored from June or July 1958 until early April 1959 at the three temperatures of -20° F., 0° F., and +10° F. They were stored in well-watched facilities in Vancouver, B. C., Pascagoula, Miss., and Boston, Mass. They were shipped under proper refrigeration to New York, where they were held at -10° F. to -20° F. for the few days prior to their being opened, thawed, and examined April 11 to 14 at the Convention.

Those who viewed the exhibit samples concluded that:

1. A good quality fishery product, packaged in standard waxed paperboard cartons, with waxed overwraps, will remain a highly acceptable product for nine months or longer when stored continuously at -20° F.
2. Samples of the same products stored at 0° F. for the same time were still probably acceptable and salable, but showed definite dehydration and losses of color.
3. Storage at +10° F. for nine months results in very serious dehydration and losses of color. The salmon, ocean perch, and raw shrimp were hardly fit for sale, and other products were of very poor quality. ("Technical Tips" No. 8, N. F. I. Flashes.)



FEDERAL ACTIONS



Department of Commerce

COAST AND GEODETIC SURVEY

FIRST EDITION OF SMALL-CRAFT SERIES 101, POTOMAC RIVER:

The first edition of *Small-Craft Chart Series 101, Potomac River*, has just been published, the U. S. Coast and Geodetic Survey announced on June 5, 1959.

The new series represents what is probably the most significant development in the progress of nautical charting since the adoption of color in 1862.

One of the most interesting aspects of the new format is that the opinions of over 24,000 small-craft owners and operators were solicited for guidance in the design and construction of this entirely new type of chart.

The Coast and Geodetic Survey has long recognized the need for a special chart which will add to the safety and pleasure of the small boat owner.

On the basis of the conclusions reached from a survey of 7,000 members of the U. S. Power Squadrons and Coast Guard Auxiliary, a program was initiated in July 1959 to develop four different formats covering the Potomac River. This area was selected for the pilot series because the configurations of the waterway are similar to the intracoastal waterway and the major rivers.

On the basis of the new surveys, four series were developed each covering the same area and including the same basic chart information but varying in format and supplementary information offered. The series were designated A, B, C, and D and 3,000 copies of each were printed and distributed with accompanying questionnaires.

After analyzing the returns from more than 23,000 questionnaires, Series B, printed on 14-1/2 x 32 inch paper, folded into four panels, was selected for reproduction and sale to the public. It divides the river into three cruising areas; each sheet carries the insets, photographs, and facility information for the base chart coverage. The basic chart is at a scale of 1:80,000 with the Washington area enlarged to 1:40,000. There are insets of active areas with tabulated facilities keys to their respective locations. The descriptive information is carried on the reverse side of the folds. Oblique photograph views of selected areas are printed in half tone.

Additional changes suggested by boatmen expressing a preference for Series B were incorporated into the final version now designated *Small-Craft Chart Series 101*. These changes include larger compass roses, both true and magnetic; headings on the course-index line; nautical mile and yard scales on insets; increased line weight of inset limits on the base chart; full color printing of insets and indexes; improved facility indicator numbers placed in boxes with a leader to an exact location; added green tint to define low-water lines; indicated junction lines on sheets based on mileage; north arrow and common reference points on oblique photos; time of tides for Washington, D. C.; red tint to more clearly define danger sectors on navigational aids; and a table of basic whistle signals.

Average maximum velocity and direction of current is shown on the base chart and tidal information is included in the facilities tables. Aids to navigation are increased in size for greater legibility and carefully selected type faces insure easy reading.

Except for the special features described, the basic chart conforms to the highly developed conventional nautical chart produced by the Coast and Geodetic Survey. The chart is printed in five colors: buff overprint for land areas; blue tint extended to the six-foot depth curve; red for restricted, danger, and fish trap areas, and for emphasis on such features as aids to navigation, anchorages, pipelines, cable areas, etc. Cultural detail, place names, projections, and scales are printed in black.

Of special interest to boat operators in the District of Columbia area is that the Washington and vicinity area of the chart carries soundings up the Potomac to Chain Bridge, and up the Anacostia to the area now being dredged by the Corps of Engineers. These areas had not previously been charted.

Publication of *Small-Craft Series 101* completes the initial phase of the small-boat charting project. The chart makes the Potomac River an experimental area to serve as a prototype for new charts of other selected areas. This program will be intensified as funds are made available and should be well advanced at the end of the next decade.

Small-Craft Series 101, Potomac River, is distributed at \$1.50 a copy. Copies are available from sales agents, district offices, and from the Washington Office of the Coast and Geodetic Survey.

New editions of charts cancel former editions. They include all corrections published in *Notice To Mariners* and all other corrections which were too extensive to be applied to the chart by hand and therefore were not published in the *Notice To Mariners*. Mariners are warned against the use of obsolete charts as new editions contain information essential to safe navigation.



Department of Labor

WAGE INCREASE RECOMMENDED FOR FISH CANNING AND PROCESSING WORKERS IN AMERICAN SAMOA:

Hearings on minimum hourly wage-rate revisions for American Samoa were held at Pago Pago from July 3 to 14, 1959. For the fish canning and processing industry, a special industry committee has recommended an increase to 75 cents an hour from the present rate of 52 cents an hour.

The Fair Labor Standards Act authorizes special industry committees to recommend minimum hourly wage rates in the territories for industries now operating at or below the \$1.00 statutory minimum that applies for the continental United States. The committee was appointed by the Secretary of Labor to in-

clude representation of employers, employees, and the public from both the mainland and American Samoa. The committee, following hearings, filed a report of its findings and recommendations with the Administrator of the Wage and Hour and Public Contracts Divisions of the Department of Labor. Committee recommendations usually become effective 15 days after publication in the Federal Register.

The published findings and recommendations of the committee were expected to be available from the Department of Labor late in August.



Department of the Treasury

BUREAU OF CUSTOMS

DECISION RENDERED ON CLASSIFICATION OF IMPORTED FISH BLOCKS:

On July 15, 1959, the United States Customs Court in New York City rendered a decision on the proper classification of imported fish blocks. The decision by the Court ruled that imported fish blocks are classifiable under Tariff Paragraph 720 (b), at 1 cent a pound when the block and its immediate container weigh in excess of 15 pounds. In containers under 15 pounds, the duty rate for fish blocks is 12½ percent ad valorem. The decision bears out the contention of the plaintiffs in the case, that imported fish blocks are further processed than fish fillets. This decision, which reverses a previous ruling by the U. S. Bureau of Customs, may be appealed within 60 days.

* * * * *

DEFINITION OF AIR-TIGHT CONTAINERS FOR IMPORTED FROZEN FISHERY PRODUCTS CLARIFIED:

In Treasury Decision 54878 (4), the U. S. Bureau of Customs states that a single polyethylene container, not exceeding 0.002 inches in thickness, is not an air-tight container. Polyethylene wrappers of this thickness are commonly used in packaging frozen fishery products imported into the United States.

This decision will help to solve the problem created by two other decisions, which held that cryovac containers and containers made from double thickness film or double-layered film are air-tight and frozen products imported wrapped in those containers are dutiable at 12½-percent ad valorem.



Eighty-Sixth Congress

(First Session)

Public bills and resolutions which may directly or indirectly affect the fisheries and allied industries are reported upon. Introduction, referral to committees, pertinent legislative actions, hearings, and other actions by the House and Senate as well as signature into law or other final disposition are covered.



COLUMBIA RIVER FISHERIES INVESTIGATION: The Subcommittee on Merchant Marine and Fisheries of the Senate Committee on Interstate and Foreign Commerce July 17 held hearings on S. Con. Res. 35, to make an investigation concerning anadromous fish in the Columbia River Basin. (See *Commercial Fisheries Review*, June 1959, pp. 91-92, Power Projects Fisheries Resources Protection.)

The House July 29 disagreed to Senate amendments to H. R. 7509, Public Works Appropriation bill, making appropriations for civil functions administered by the Department of the Army, certain agencies of the Department of the Interior, and the Tennessee Valley Authority, for fiscal year 1960; agreed to conference requested July 9 by the Senate, and appointed conferees. Included are funds for the Corps of Army Engineers and Bureau of Reclamation for water resources construction and investigation programs, including certain Columbia River projects.

Public Works Appropriations for 1960 (Hearings before Subcommittee on Public Works Appropriations of the House Committee on Appropriations, in four parts, 86th Congress, 1st Session, making appropriations for the civil functions administered by the Department of the Army, certain agencies of the Department of the Interior, and the Tennessee Valley Authority, for fiscal year ending June 30, 1960, and for other purposes), 4,287 pp., printed, including lists of witnesses and indexes. Part 1, Civil Functions, Department of the Army; Part 2, Bonneville Power Administration, Bureau of Reclamation, Southeastern Power Administration, Southwestern Power Administration, and Tennessee Valley Authority; Part 3 and 4, Statements of Members

of Congress, Interested Organizations, and Individuals. Included are funds for the Corps of Army Engineers and Bureau of Reclamation for water resources development, management, construction, and investigation programs including certain Columbia River Basin projects.

Public Works Appropriations, 1960 (Hearings before Subcommittee of Senate Committee on Appropriations, 86th Congress, 1st Session, on H. R. 7509, making appropriations for civil functions administered by the Department of the Army, certain agencies of the Department of the Interior, and the Tennessee Valley Authority, for fiscal year ending June 30, 1960, and for other purposes), 4,061 pp., including lists of witnesses and indexes. Included are funds for the Corps of Army Engineers and Bureau of Reclamation for water resources development, management, construction, and investigation programs, including certain Columbia River Basin projects.

DUMPING RESTRICTIONS IN COASTAL WATERS: H. R. 8584 (Miller), a bill to amend section 4472 of the Revised Statutes to provide that disposition at sea of certain explosives and other dangerous articles shall be subject to regulation; to the Committee on Merchant Marine and Fisheries; introduced in House August 10. Similar to H. R. 8058 and related bills previously introduced designed to protect fishery resources and to safeguard navigation.

FISH HATCHERIES: House Report No. 654, Establishing a Fish Hatchery in the Northwestern Part of the State of Pennsylvania (July 14, 1959, 86th Congress, 1st Session, Report of the House Committee on Merchant Marine and Fisheries to accompany H. R. 2398), 3 pp., printed. The report contains the purpose and provisions, legislative history, Committee recommendations, and Department of the Interior report favoring enactment of the bill.

The House July 20 passed H. R. 2398, without amendment, and sent the bill to the Senate; referred to the Senate Committee on Interstate and Foreign Commerce.

Subcommittee on Merchant Marine and Fisheries of the Senate Committee on Interstate and Foreign Commerce August 4 held hearings on H. R. 2398 and ordered the bill favorably reported to the full Committee. Senate Committee on Interstate and Foreign Commerce August 5 reported the bill to the Senate recommending enactment (S. Rept. 622).

Senate Report No. 622, Establishing a Fish Hatchery in the Northwestern Part of the State of Pennsylvania (August 6, 1959, 86th Congress, 1st Session, Report of the Senate Committee on Interstate and Foreign Commerce, to accompany H. R. 2398), 3 pp., printed. Contains the purpose and provisions of the bill, legislative history, Committee recommendations, and departmental approval of the legislation.

Subcommittee on Merchant Marine and Fisheries of the Senate Committee on Interstate and Foreign Commerce conducted hearings August 4, 5, and 6 on pending fisheries legislative bills including S. 2053, a bill providing for transfer of the

Orangeburg County Fish Hatchery, S. C., to the United States and provide for improvement and expansion of its facilities and for other purposes.

FISH AND WILDLIFE AID THROUGH EQUIPMENT TRANSFERS: H. R. 8373 (Barry), a bill to provide that surplus property of the United States may be donated to the States for the promotion of fish and wildlife management activities, and for other purposes; to the Committee on Government Operations; introduced in House July 23. Similar to H. R. 7190 and related bills previously introduced which would provide change in existing laws to include State Fish and Game Departments among agencies eligible for receipt by transfer of surplus Federal Government property and equipment for use in furthering their fish and wildlife conservation, restoration, and educational objectives.

Special Subcommittee of the Senate Committee on Government Operations held hearings July 29 and 30 on pending bills providing for the expansion of the donable property program, authorized under the Federal Property and Administrative Service Act of 1949, to other public agencies and organizations. Includes bills providing for fish and wildlife aid through transfer of surplus property and equipment for use in furthering fish and wildlife conservation, restoration, and educational objectives.

Also S. 2442 (Gruening and Bartlett), a bill to provide for the disposition of surplus personal property to the government of Alaska; to the Committee on Interior and Insular Affairs; introduced in Senate July 24; and H. R. 8408 (Rivers of Alaska), an identical bill; to the Committee on Government Operations; introduced in House July 27. Would extend an Act which provided for the disposition of surplus personal property to the Territorial Government of Alaska (68 Stat. 794), as amended (70 Stat. 918), which among other purposes, included certain surplus Federal Government property and equipment for use in furthering fish and wildlife conservation, restoration, and educational objectives; and would further provide for elimination of inappropriate references occasioned by recent Statehood. Somewhat similar to H. R. 7190 and related bills previously introduced which among other purposes would make certain State Agencies eligible for receipt by transfer of surplus equipment to aid fish and wildlife programs.

FISH AND WILDLIFE COOPERATIVE RESEARCH TRAINING UNITS: Subcommittee on Fisheries and Wildlife Conservation of the House Committee on Merchant Marine and Fisheries August 4 held hearings but took no action on H. R. 5814, a bill to provide for cooperative unit programs of research, education, and demonstration between the Federal Government of the United States, colleges and universities, the several States and Territories, and private organizations, and for other purposes.

Subcommittee on Merchant Marine and Fisheries of the Senate Committee on Interstate and Foreign Commerce conducted hearings August 4, 5, and 6 on pending fisheries legislative bills including S. 1781, companion bill to H. R. 5814.

FISHING VESSEL CONSTRUCTION SUBSIDIES: The House Committee on Merchant Marine and Fisheries July 30 ordered favorably reported

H. R. 5421, a bill to provide a program of assistance to correct inequities in the construction of fishing vessels and to enable the fishing industry of the United States to regain a favorable economic status, and for other purposes; with amendment (H. Rept. No. 770).

House Report No. 770, Providing a Program of Assistance for the Construction of Fishing Vessels (August 5, 1959, 86th Congress, 1st Session, Report of the House Committee on Merchant Marine and Fisheries to accompany H. R. 5421, a bill to provide a program of assistance to correct inequities in the construction of fishing vessels and to enable the fishing industry of the United States to regain a favorable economic status, and for other purposes), 10 pp., printed. Contains the bill as amended, committee recommendations, legislative background, purpose and major provisions, summary of need for legislation, and Departmental recommendations. As amended the bill would provide for a subsidy for the construction of new fishing vessels in shipyards of the United States over a 3-year period, and would authorize annual appropriations of one million dollars to carry out the provisions of the program. A provision to establish a loan fund to be used in making loans to processors of fishery products within distressed segments of the fishing industry was eliminated by an amendment to the original bill. H. R. 5421 was previously reported in this periodical under title of Fisheries Assistance Act of 1959.

Subcommittee on Merchant Marine and Fisheries of the Senate Committee on Interstate and Foreign Commerce held hearings August 5 on S. 1374, and related bill S. 2338, to assist the fishing industry of the United States to regain a favorable economic status. Both legislative bills provide a program of assistance in the construction of fishing vessels, and for other purposes.

FISHING VESSEL MORTGAGE INSURANCE FUND: The Assistant Secretary of the Interior transmitted to the House and Senate a draft of proposed legislation to continue the application of the Merchant Marine Act of 1936, as amended, to certain functions relating to fishing vessels transferred to the Secretary of the Interior, and for other purposes (with accompanying paper); in the House referred July 28 to the Committee on Merchant Marine and Fisheries; in the Senate referred July 29 to the Committee on Interstate and Foreign Commerce.

Subcommittee on Merchant Marine and Fisheries of the Senate Committee on Interstate and Foreign Commerce conducted hearings August 4, 5, and 6 on pending fisheries legislation including S. 2342, a bill creating a Federal Fishing Vessel Mortgage Insurance Fund.

S. 2481 (Magnuson), a bill to continue the application of the Merchant Marine Act of 1936, as amended, to certain functions relating to fishing vessels transferred to the Secretary of the Interior, and for other purposes; to the Committee on Interstate and Foreign Commerce; introduced in Senate August 4. Would create a Federal Fishing Vessel Mortgage Insurance Fund which shall be used by the Secretary of the Interior as a revolving fund for the purpose of carrying out the ship mortgage

provisions of title XI of the Merchant Marine Act of 1936, as amended, as it applies to fishing vessels under the Fish and Wildlife Act of 1956 (70 Stat. 1120). Further provides that if at any time funds are not sufficient to pay any amount the Secretary of the Interior is required to pay on ship mortgage insurance on fishing vessels, notes or other obligations may be issued to the Secretary of the Treasury as may be necessary. Similar to S. 2342 previously introduced.

Also H. R. 8613 (Bonner); introduced in House August 11; referred to the Committee on Merchant Marine and Fisheries. Identical to S. 2481.

FISHERY PRODUCTS INCLUDED IN FOOD-ALLOTMENT PROGRAM: The House Committee on Agriculture held hearings July 30 and 31 on H. R. 1359, and related bills, to distribute certain surplus food commodities to needy persons in the United States through a food stamp system. Includes legislative bills which would provide for inclusion of fishery products in the program.

GAME FISH IN DAM RESERVOIRS RESEARCH: Subcommittee on Merchant Marine and Fisheries of the Senate Committee on Interstate and Foreign Commerce conducted hearings August 4, 5, and 6 on pending fisheries legislative bills including S. 1262, a bill to direct the Secretary of the Interior to establish a research program in order to determine means of improving the conservation of game fish in dam reservoirs.

IMPORTED COMMODITY LABELING: The House Committee on Ways and Means August 3 ordered favorably reported to the House without amendment, H. R. 5054, to amend the Tariff Act of 1930 with respect to the marking of imported articles and containers. Provides that imported articles removed from original container, repacked, and offered for sale in new package or container, shall be marked to show the ultimate purchaser the English name of the country of origin of such article.

INTERSTATE TRANSPORTATION OF FISH: House Report No. 653, Clarifying a Provision in the Black Bass Act Relating to the Interstate Transportation of Fish (July 14, 1959, 86th Congress, 1st Session, Report of the House Committee on Merchant Marine and Fisheries to accompany H. R. 5854), 3 pp., printed. The report contains the purpose of the bill, Committee Recommendations, executive communications from the Department of Interior and the Department of Justice, and changes in existing law. The legislation would provide for amendment to the Black Bass Act to make clear that only lawfully taken fish or fish eggs can be shipped in interstate commerce.

The House on July 20 passed without amendment and sent to the Senate H. R. 5854, to clarify the Black Bass Act relative to interstate transportation of fish.

Subcommittee on Merchant Marine and Fisheries of the Senate Committee on Interstate and Foreign Commerce conducted hearings August 4, 5, and 6 on pending fisheries legislation including S. 1391, companion bill to H. R. 5854.

INSECTICIDES EFFECT UPON FISH AND WILDLIFE: The Subcommittee on Fisheries and Wildlife Conservation of the House Committee on Merchant Marine and Fisheries August 4 held hearings but took no action on H. R. 5813, a bill to amend the act of August 1, 1958, to authorize and direct the Secretary of the Interior to undertake continuing studies of the effects of insecticides, herbicides, fungicides, and other pesticides, upon fish and wildlife for the purpose of preventing losses of those invaluable natural resources and for other purposes.

Senate Subcommittee on Merchant Marine and Fisheries of the Committee on Interstate and Foreign Commerce conducted hearings August 4, 5, and 6 on pending fisheries legislative bills including S. 1575, companion bill to H. R. 5813.

MARINE GAME FISH RESEARCH: Subcommittee on Fisheries and Wildlife Conservation of the House Committee on Merchant Marine and Fisheries August 4 held hearings but took no action on H. R. 5004, a bill authorizing and directing the Secretary of the Interior to undertake continuing research on the biology, fluctuations, status, and statistics of the migratory marine species of game fish of the United States and contiguous waters.

MARKETING FACILITIES IMPROVEMENT ACT: H. R. 8262 (Cooley), a bill to encourage the improvement and development of marketing facilities for handling perishable agricultural commodities; to the Committee on Agriculture; introduced in House July 16. Similar to H. R. 1807 and related bills previously introduced which would provide assistance for improvement and development of public marketing facilities for the wholesale handling of certain perishable commodities, including seafood, as will be conducive to orderly and efficient distribution, increased consumption, a reduction in the spread between prices paid by consumers and those received by producers, and for other purposes.

NORTH PACIFIC FISHERY RESOURCES PROTECTION: S. Res. 145 (Magnuson), a resolution favoring negotiations with the Governments of Canada, Japan, and Russia concerning a new fisheries treaty; to the Committee on Foreign Relations; introduced in Senate July 15.

Whereas in 1952, the Governments of the United States of America, Canada, and Japan, entered into an International Convention for the High Seas Fisheries of the North Pacific Ocean in order to ensure the maximum sustained productivity of the fishery resources of the North Pacific Ocean; and

Whereas said parties to the treaty agreed to establish the meridian of 175° West Longitude, as a Provisional Line, subject to readjustment after scientific study, as a line that best divides salmon of Asiatic origin and salmon of North American origin; and

Whereas while the Japanese have fully complied with that provision of the treaty and have abstained from fishing for salmon east of the Provisional Line of 175° West Longitude, nevertheless there now is a strong body of evidence that the Japanese

have been taking on the high seas red salmon that originated in North American streams and that therefore the Provisional Abstention Line should be changed, as provided for in the treaty; and

Whereas by reason of the heavy catches of red salmon, of American origin, by the Japanese, on the high seas, the return of salmon to American streams has greatly diminished; and

Whereas the Bristol Bay fishery in Alaska, the world's richest red salmon fishery, which gives employment to a substantial segment of the population of the State of Alaska, is headed for extinction by reason of these high seas net fishing operations conducted by the Japanese, and

Whereas the Senate is not unmindful of the fact that the fishing industry is of paramount importance to Japan and that by reason of certain conditions imposed by Russia the Japanese have been restricted in their fishing operations in certain Pacific Ocean areas and by reason of economic necessity have been compelled to fish close to the 175th Parallel; and

Whereas the United States, Canada, Japan, and Russia have a common interest in preserving optimum productivity of the fishery resources of the Pacific Ocean: Now, therefore, be it

Resolved. That it is the sense of the Senate that the Secretary of State should immediately enter into negotiations with the Governments of Canada, Japan, and Russia, looking to the establishment of a new fisheries treaty with these countries and an equitable solution of the problems involved; and be it further

Resolved. That the officials of our Government should promptly negotiate with the Governments of Canada and Japan in an effort to bring about the establishment of a temporary zone in which all parties would voluntarily refrain from fishing until the question of a new Abstention Line can be resolved.

OCEANOGRAPHY: The Senate July 15 adopted with amendments S. Res. 136, relating to research on oceanography and the report of the Committee on Oceanography to the President.

OUTDOOR RECREATION RESOURCES REVIEW COMMISSION: The National Outdoor Recreation Resources Review Commission held its first meeting in conjunction with the newly-appointed 25-person Advisory Council, July 16-17, in room P-61, Senate wing of the Capitol, Washington, D. C.

POWER PROJECTS FISHERIES RESOURCES PROTECTION: H. R. 8495 (Dingell), a bill to promote the conservation of migratory fish and game by requiring certain approval by the Secretary of the Interior of licenses issued under the Federal Power Act; to the Committee on Interstate and Foreign Commerce; introduced in House August 3. Similar to S. 1420, previously introduced, which would provide the U. S. Fish and Wildlife Service with collateral jurisdiction in Federal Power Commission decisions affecting hydroelectric power development in areas where dams would impair migratory fisheries resources and wildlife values.

PRICE DISCRIMINATION ENFORCEMENT OF ORDERS: House agreed July 13 to the Senate amendments to House amendments to S. 726, to provide for the more expeditious enforcement of cease-and-desist orders issued under the Clayton Act, which action cleared the bill for Presidential consideration. The legislation would implement the enforcement procedures of the Clayton Act by making applicable the present Federal Trade Commission Act enforcement provisions against price discrimination, tying arrangements, mergers, and interlocking directorates, and for other purposes.

The President July 23 signed into law S. 726, to amend section II of the Clayton Act so as to provide for the more expeditious enforcement of cease-and-desist orders issued thereunder (P. L. 86-107).

PRICE DISCRIMINATION FUNCTIONAL DISCOUNTS: Functional Discounts (Hearings before Antitrust Subcommittee No. 5, of the House Committee on the Judiciary, June 25 and 26, 1959, 86th Congress, 1st Session, on H. R. 848, H. R. 927, H. R. 2788, H. R. 2868, and H. R. 4530, bills to amend section 2(a) of the Clayton Act, as amended by the Robinson-Patman Act, by adding a new proviso), 169 pp., printed, including table of contents. Report contains text of legislative bills; testimony and correspondence presented by Committee members, interested individuals, and representatives of industry and the Congress in support of and in opposition to proposed legislation. The legislation would impose a duty on the manufacturer to insure that the small retailer remains competitive by establishing appropriate differentials for the wholesaler or jobber from whom this retailer must purchase. The bills would add a new proviso to the Clayton Act, as amended by the Robinson-Patman Act, designed to make it necessary for the manufacturing seller to grant in good faith a "reasonably adequate" price differential to wholesalers. It further requires that such a differential be "reasonably calculated" to allow the wholesaler's customers to compete with like firms which purchase directly from the seller. These functional discount requirements would not, however, be imposed upon the seller willing to accommodate all would-be purchasers without regard to their size or status in the distributive process.

PUERTO RICO STATEHOOD: S. 2396 (Chavez), a bill to require the Commonwealth of Puerto Rico to conduct a referendum to determine whether the people of such Commonwealth desire to be admitted into the Union as a State; to the Committee on Interior and Insular Affairs; introduced in Senate July 16. Similar to H. R. 7003 previously introduced.

RADIOACTIVE MATERIAL DISPOSAL RESTRICTIONS: H. R. 8187 (Thompson of Texas), a bill to impose certain restrictions on disposing of radioactive materials by depositing it in the Gulf of Mexico, and for other purposes; to the Joint Committee on Atomic Energy; introduced in House July 13.

Also H. R. 8423 (Bennett of Florida), a bill to impose certain restrictions on disposing of radioactive material by depositing it in the Atlantic Ocean, and for other purposes; to the Joint Committee on Atomic Energy; introduced in House

July 28. Similar to H. R. 8187 previously introduced but which provided restrictions for disposal of radioactive waste only for the Gulf of Mexico.

The Special Subcommittee on Oceanography of the House Committee on Merchant Marine and Fisheries July 13 and 14 conducted hearings on the disposal of radioactive material and atomic waste. Testimony was presented by representatives of the Atomic Energy Commission and the U. S. Bureau of Commercial Fisheries.

The Special Subcommittee on Radiation of the Joint Committee on Atomic Energy July 22 met in executive session to consider a draft of its report on waste disposal, on which subject hearings were recently held. The Subcommittee held an additional day of hearings with regard to this matter on July 29.

Industrial Radioactive Waste Disposal (Hearings January 28, 29, and 30, February 2 and 3, 1959, Volume I, before Special Subcommittee on Radiation of the Joint Committee on Atomic Energy, Congress of the United States, 86th Congress, 1st Session, on industrial radioactive waste disposal), 986 pp., printed. Volume 1, of four volumes, covers hearings concerned with the origin and nature of various types of radioactive wastes evolved from nuclear energy activities and operations in use to manage these wastes at various Atomic Energy and other installations. Also the volume deals with the international aspects of the disposal problems.

SALT-WATER RESEARCH LABORATORY: Subcommittee on Merchant Marine and Fisheries of the Senate Committee on Interstate and Foreign Commerce held hearings August 4, 5, and 6 on pending fisheries legislative bills including S. 1576, a bill to provide for the construction of a salt-water research laboratory at Seattle, Wash. The bill would provide for construction and equipping of a laboratory for the purpose of conducting research on marine life. Such laboratory would be operated jointly by the State of Washington Department of Fisheries, the University of Washington's College of Fisheries and School of Oceanography, and the U. S. Fish and Wildlife Service.

SHIP MORTGAGE INSURANCE AMENDMENTS OF 1959: The House on July 20 passed and cleared for the President S. 1434, to amend the Merchant Marine Act with respect to insurance of ship mortgages. The legislation provides that the prospective owner be permitted to delay placing a mortgage on a vessel until some time after it has been delivered by the shipbuilder, without losing privilege of having the mortgage insured.

The President July 31 signed into law S. 1434, to amend the Merchant Marine Act with respect to insurance of ship mortgages (P. L. 86-123).

SHRIMP IMPORT DUTIES: H. R. 8184 (Pres-ton), a bill to provide for an ad valorem duty on fresh, frozen, or breaded shrimp imported during the next 2 years; to the Committee on Ways and Means; introduced in House July 13. Provides for amendment of the Tariff Act of 1930 by shifting fresh, frozen, and breaded shrimp from the "free" list to the "duty" list of import commodities and to impose a 33½ percent ad valorem duty on such

shrimp classifications. Canned and other processed shrimp would not be affected. Somewhat similar to H. R. 483 previously introduced but which provided for an ad valorem duty of 35 percent on all classifications of shrimp, without exception.

Also H. R. 8566 (Sikes), a bill to provide an ad valorem duty on the importation of shrimp; to the Committee on Ways and Means; introduced in House August 6. The proposed legislation would provide for a duty of 35 percent ad valorem on all classifications of imported shrimp. Identical to H. R. 483 and somewhat similar to related bill H. R. 8184 previously introduced which would provide for duties on shrimp importations to protect the domestic industry and for other purposes.

SMALL BUSINESS LEGISLATIVE HEARINGS: The Subcommittee on Small Business of the Senate Committee on Banking and Currency July 22 concluded scheduled hearings on bills to amend the Small Business Act and the Small Business Investment Act of 1958. The current series of hearings was held June 22, 29, and 30; July 1, 2, 8, 20, 21, and 22.

SMALL BUSINESS AND FOREIGN TRADE: Subcommittee No. 3 of the House Select Committee on Small Business July 14 and 15 conducted hearings with respect to the effect of international trade on small business.

SMALL BUSINESS TAX RELIEF: H. R. 8604 (Steed), a bill to provide a program of tax adjustment for small business and for persons engaged in small business; to the Committee on Ways and Means; introduced in House August 10. Similar to H. R. 2 and related bills which provide for tax adjustment in the interest of small business.

STATE DEPARTMENT APPROPRIATIONS: The President on July 14 signed into law H. R. 7343, fiscal 1960 appropriations for the Departments of State and Justice, the Judiciary, and related agencies (P. L. 86-84). Included under the Department of State are funds for the International Fisheries Commissions to enable the United States to meet its obligations in connection with participation in eight such commissions pursuant to treaties or conventions, and implementing Acts of Congress. Provides \$1,725,000 for the International Fisheries Commissions, an increase of \$61,300 over the 1959 fiscal year appropriation to meet increased pay costs, but \$29,000 below the amount requested in the budget estimate.

SUPPLEMENTAL APPROPRIATIONS, 1960: Senate Committee on Appropriations conducted hearings on H. R. 7978, supplemental appropriations for fiscal year 1960, July 13, 14, 16, 17, 20, 21, 22, 23, and 24. Committee met in executive session July 29 and 30 and ordered the bill favorably reported to the Senate, with amendments (S. Rept. 597). Included are funds for transitional grants to Alaska, pursuant to legislative authorization (Public Law 86-70); for the National Outdoor Recreation Resources Review Commission; and for certain River Basin Study Commissions.

Senate August 3 passed with committee amendments H. R. 7978, supplemental appropriations for fiscal year 1960. Senate insisted on its amend-

ments, asked for conference with House, and appointed conferees.

Senate Report No. 597, Supplemental Appropriations Bill, 1960 (July 31, 1959, 86th Congress, 1st Session, Report of the Senate Committee on Appropriations to accompany H. R. 7978, a bill making supplemental appropriations for the fiscal year ending June 30, 1960, and for other purposes), 36 pp., printed. Contains budget estimates, House allowances, and Committee recommendations. Included are tables showing comparative statement of budget estimates and amounts recommended for Department or activity.

Supplemental Appropriation Bill for 1960 (Hearings before the Senate Committee on Appropriations, 86th Congress, 1st Session, on H. R. 7978, an act making supplemental appropriations for the fiscal year ending June 30, 1960, and for other purposes), 946 pp., printed, including list of witnesses and index. Contains budget estimates, House allowances, testimony presented by agencies and Departments of Government, and certain legislative authorizations. Included are funds for transitional grants to Alaska; for the National Outdoor Recreation Resources Review Commission; and for certain River Basin Study Commissions.

TRADE AGREEMENTS PROGRAM: The Chairman of the U. S. Tariff Commission, pursuant to law, transmitted to the House and Senate the 11th Annual Report of the Commission on the operation of the trade agreements program, for the period July 1957-June 1958 (with accompanying papers); in the House referred July 21 to the Committee on Ways and Means in the Senate referred July 23 to the Committee on Finance.

UNEMPLOYMENT RELIEF IN DEPRESSED AREAS: H. R. 8524 (Fulton), a bill to establish an effective program to alleviate conditions of substantial and persistent unemployment and underemployment in certain economically depressed areas; to the Committee on Banking and Currency; introduced in House August 4. Similar to H. R. 71 and related bills previously introduced which would provide for economic assistance and unemployment relief to depressed areas, and for other purposes.

WAGES: The Subcommittee on Labor of the Senate Committee on Labor and Public Welfare on July 10, in executive session, ordered favorably reported to the full committee with amendments S. 1046, a bill to amend the Fair Labor Standards Act of 1938, as amended, to provide coverage for employees of large enterprises engaged in retail trade or service and of other employers engaged in activities affecting commerce, to increase the minimum wage under the Act to \$1.25 an hour, and for other purposes.

To Amend The Fair Labor Standards Act (Hearings May 7, 8, 11, 12, 13, 14, 15, 19, 26, and June 4, 1959, Subcommittee on Labor of the Senate Committee on Labor and Public Welfare, 86th Congress, 1st Session, on S. 25, S. 141, S. 1046, S. 1116, S. 1470, S. 1874, and S. 1967, bills to amend the Fair Labor Standards Act of 1938 to extend coverage under the Act, to increase the minimum hourly wage rate, and for other purposes), 1,283 pp., printed. Contains text of the several legislative bills;

testimony presented by Government and industry representatives; certain Departmental, Commission, and Committee reports; various statements, letters, and information submitted.

S. 1046 Amendments, intended to be proposed by Senator Prouty to Bill S. 1264 (Kennedy and other Senators), to amend the Fair Labor Standards Act of 1938, as amended, to provide coverage for employees of large enterprises engaged in retail trade or service and of other employers engaged in activities affecting commerce, to increase the minimum wage under the Act to \$1.25 an hour, and for other purposes; to the Committee on Labor and

Public Welfare; introduced in Senate July 17. Provides for several technical amendments to S. 1046, previously introduced.

WAGE LAW ENFORCEMENT OF CERTAIN PROVISIONS: S. 2385 (Prouty), a bill to amend the Fair Labor Standards Act of 1938, as amended, to provide more effective procedures for enforcing the provisions of the Act; to the Committee on Labor and Public Works; introduced in Senate July 15. Provides for amendment to existing law to strengthen enforcement provisions in regards to payment of minimum wages and overtime compensation. Similar to H. R. 8059 previously introduced.



SHRIMP

Shrimp--one of the most popular shellfish--are available all year-round. They are found off the Atlantic coast from North Carolina south, in the Gulf of Mexico, and on the Pacific Coast from Southeastern Alaska to San Francisco Bay.

The shrimp sold in most regions of the United States are the "tails." They may be purchased fresh or frozen, raw, cooked, or breaded.

Shrimp are customarily sold according to size or grade. The terms used are jumbo, large, medium, and small. The largest size runs 15 or fewer shrimp to the pound and the smallest size runs 60 or more to the pound.

Although shrimp range in color from greenish gray to brownish red when raw, they differ little in appearance and flavor when cooked. All of the various kinds of shrimp are tender and white-meated, with a distinctive flavor.

Shrimp are used in cocktails, salads, fried, and as the main ingredient for many delicious and satisfying main dishes such as "Shrimp Oriental," a fried shrimp recipe recommended by the Home Economists of the U. S. Bureau of Commercial Fisheries.

SHRIMP ORIENTAL

1½ pounds shrimp, fresh or frozen	1 cup flour
¼ cup lemon juice	3 eggs, beaten
	1½ teaspoons salt

Thaw frozen shrimp. Peel shrimp. Cut almost through lengthwise and remove sand veins. Wash. Pour lemon juice over shrimp and let stand 10 minutes. Place flour in paper bag. Add shrimp and shake well. Combine egg and salt. Dip each shrimp in egg. Place shrimp in a heavy fryingpan which contains about one-eighth inch fat, hot but not smoking. Fry at moderate heat. When shrimp are brown on one side, turn carefully and brown the other side. Cooking time approximately four minutes. Drain on absorbent paper. Serves 6.

FISHERY INDICATORS

CHART 1 - FISHERY LANDINGS for SELECTED STATES

In Millions of Pounds

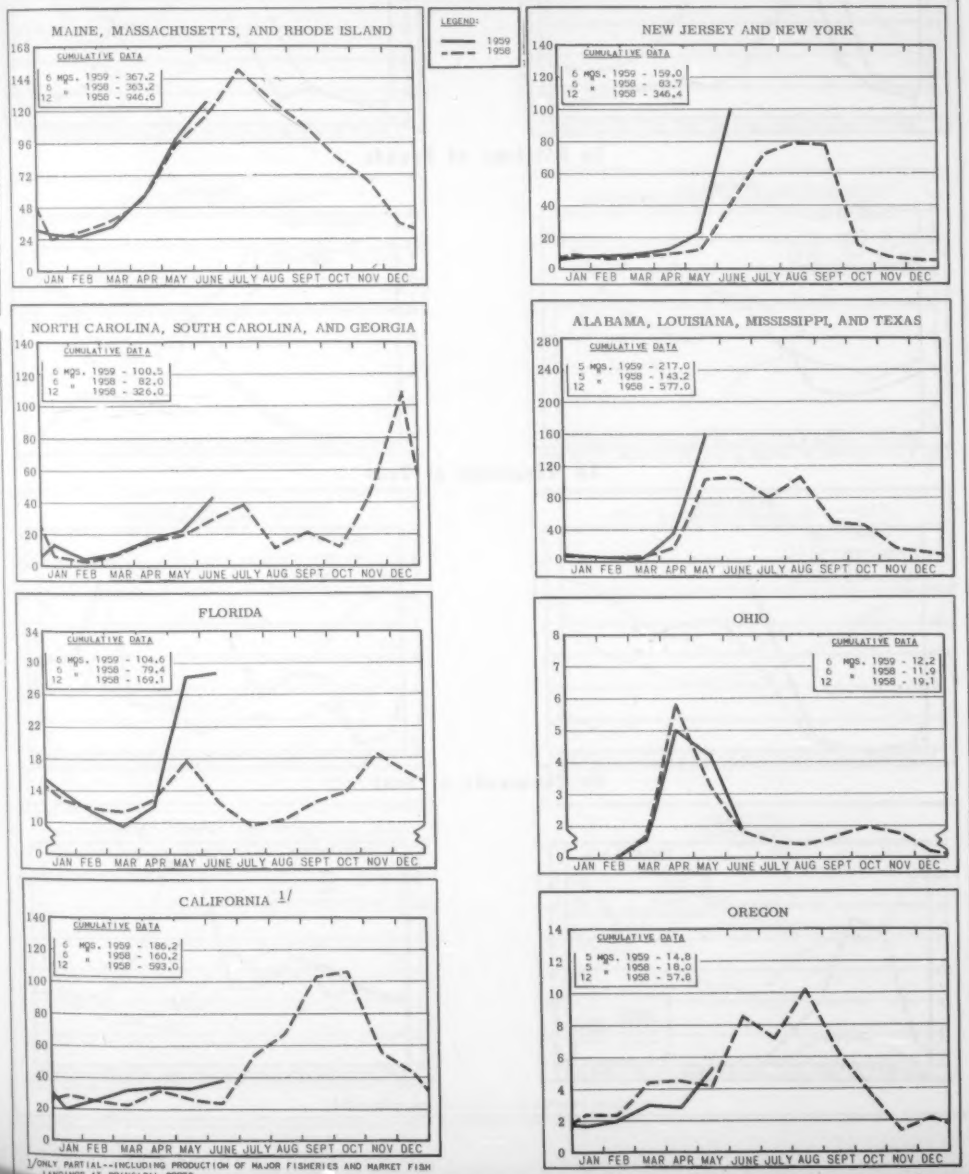
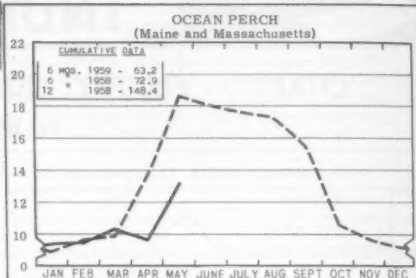
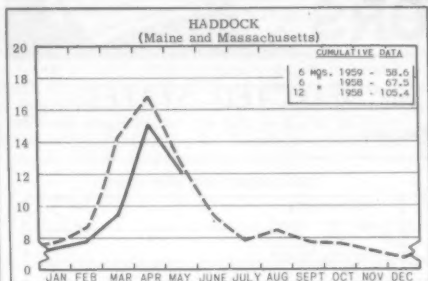
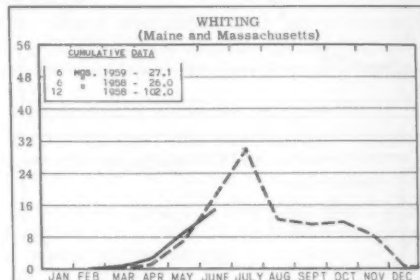
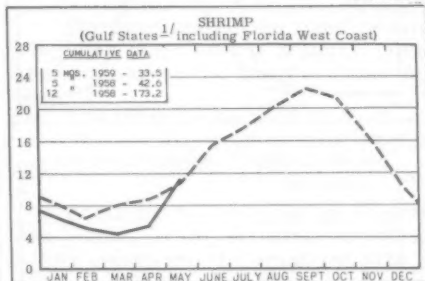


CHART 2 - LANDINGS for SELECTED FISHERIES

In Millions of Pounds

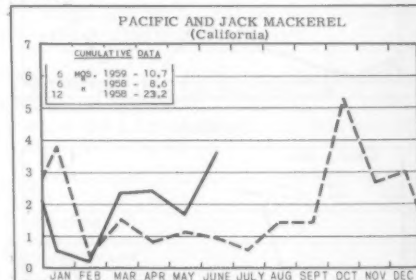
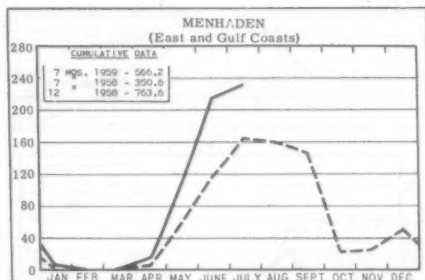


In Millions of Pounds



¹/₂ LA. & ALA. DATA BASED ON LANDINGS AT PRINCIPAL PORTS AND ARE NOT COMPLETE.

In Thousands of Tons



In Thousands of Tons

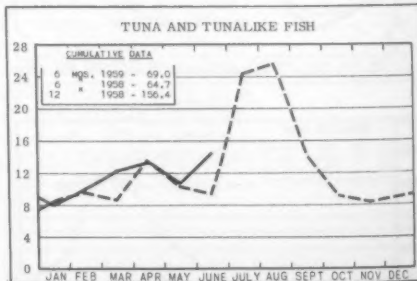
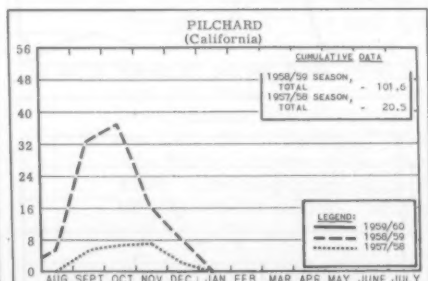
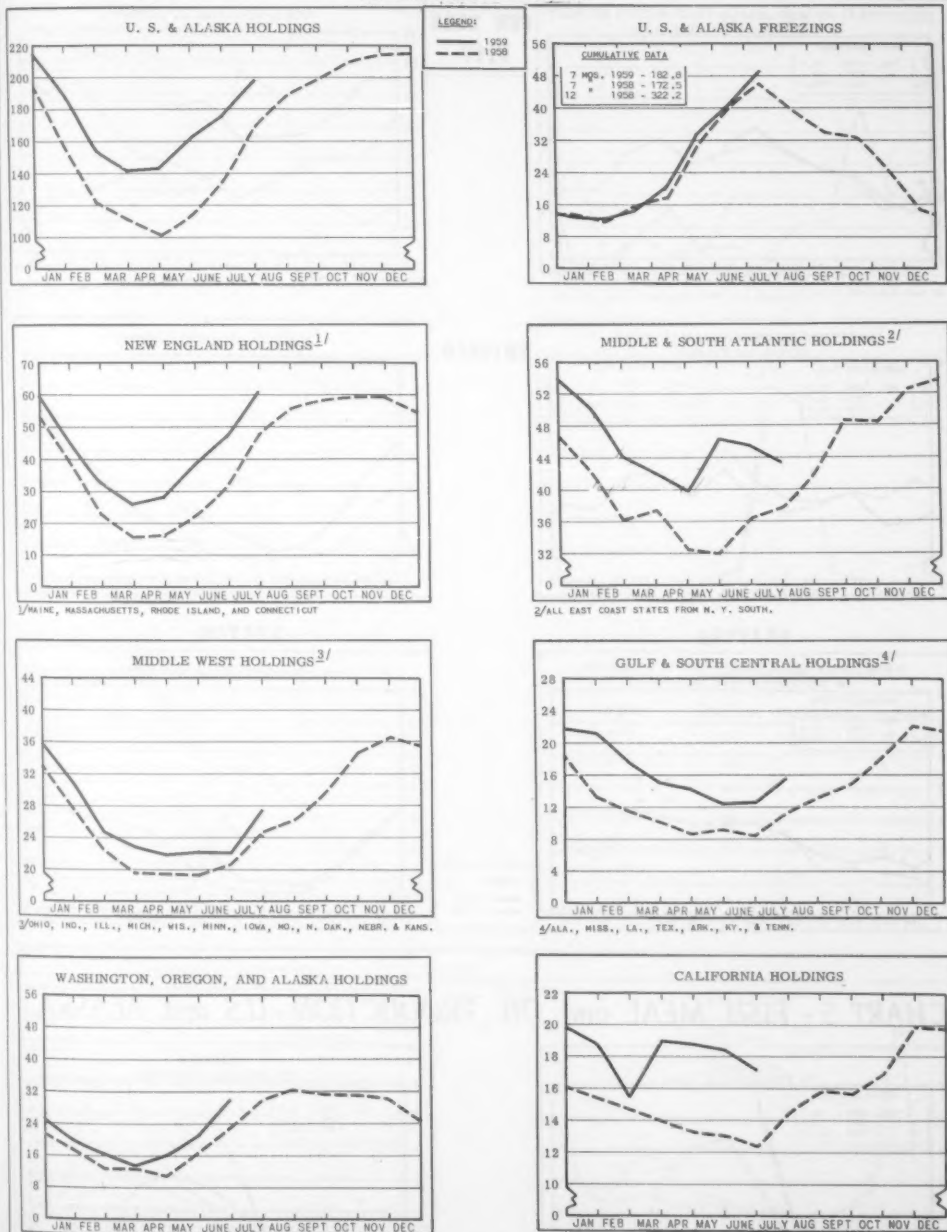


CHART 3 - COLD-STORAGE HOLDINGS and FREEZINGS of FISHERY PRODUCTS *

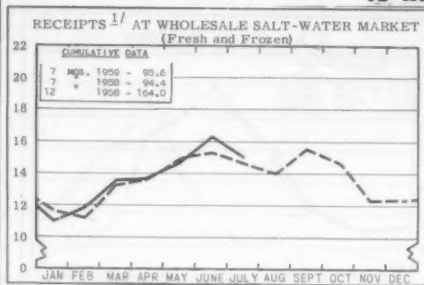
In Millions of Pounds



* Excludes salted, cured, and smoked products.

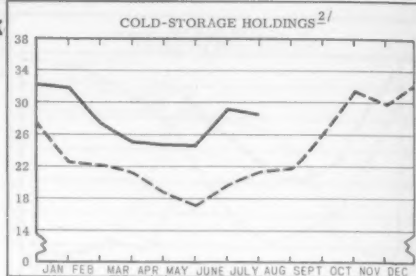
CHART 4 - RECEIPTS and COLD-STORAGE HOLDINGS of FISHERY PRODUCTS at PRINCIPAL DISTRIBUTION CENTERS

In Millions of Pounds

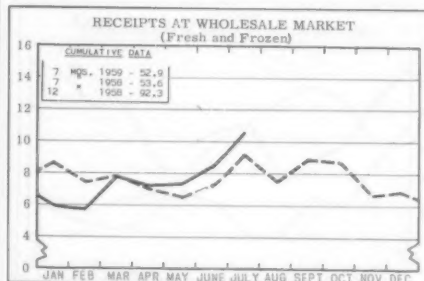


^{1/} INCLUDE TRUCK AND RAIL IMPORTS FROM CANADA AND DIRECT VESSEL LANDINGS AT NEW YORK CITY.

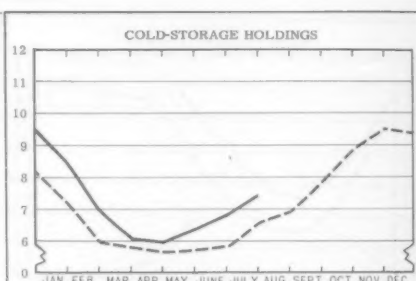
NEW YORK CITY



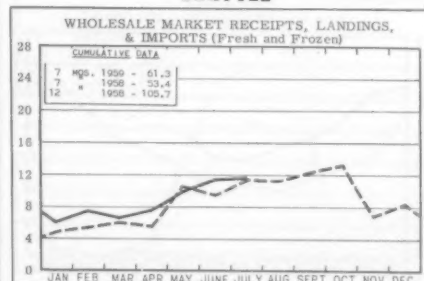
^{2/} AS REPORTED BY PLANTS IN METROPOLITAN AREA.



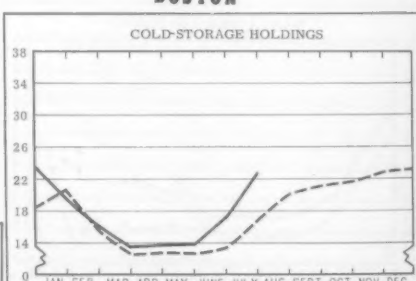
CHICAGO



SEATTLE



BOSTON



LEGEND:

— 1959

- - - 1958

CHART 5 - FISH MEAL and OIL PRODUCTION - U.S. and ALASKA

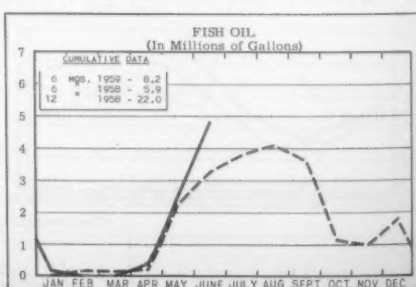
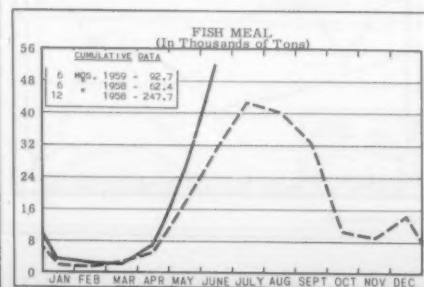
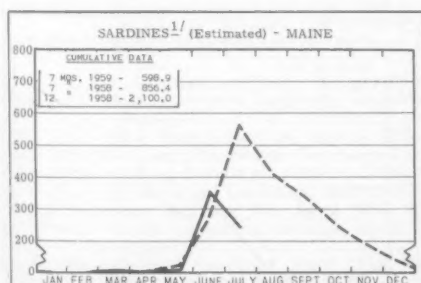
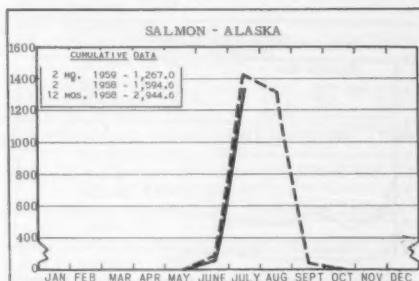
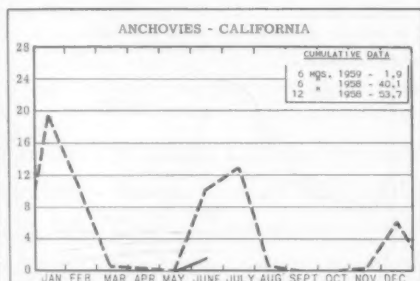
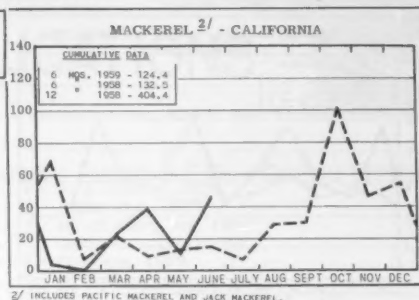
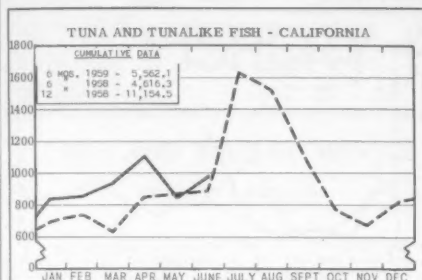


CHART 6 - CANNED PACKS of SELECTED FISHERY PRODUCTS

In Thousands of Standard Cases



STANDARD CASES

Variety	No. Cans	Designation	Net Wgt.
SARDINES.....	100	$\frac{1}{2}$ drawn	3 $\frac{1}{2}$ oz.
SHRIMP.....	48	--	5 oz.
TUNA.....	48	# $\frac{1}{2}$ tuna	6 & 7 oz.
PILCHARDS...	48	# 1 oval	15 oz.
SALMON.....	48	1-lb. tall	16 oz.
ANCHOVIES...	48	$\frac{1}{2}$ -lb.	8 oz.

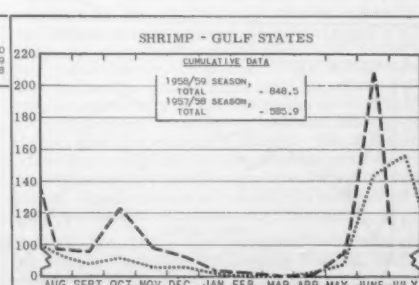
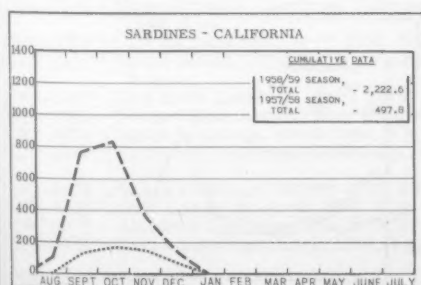
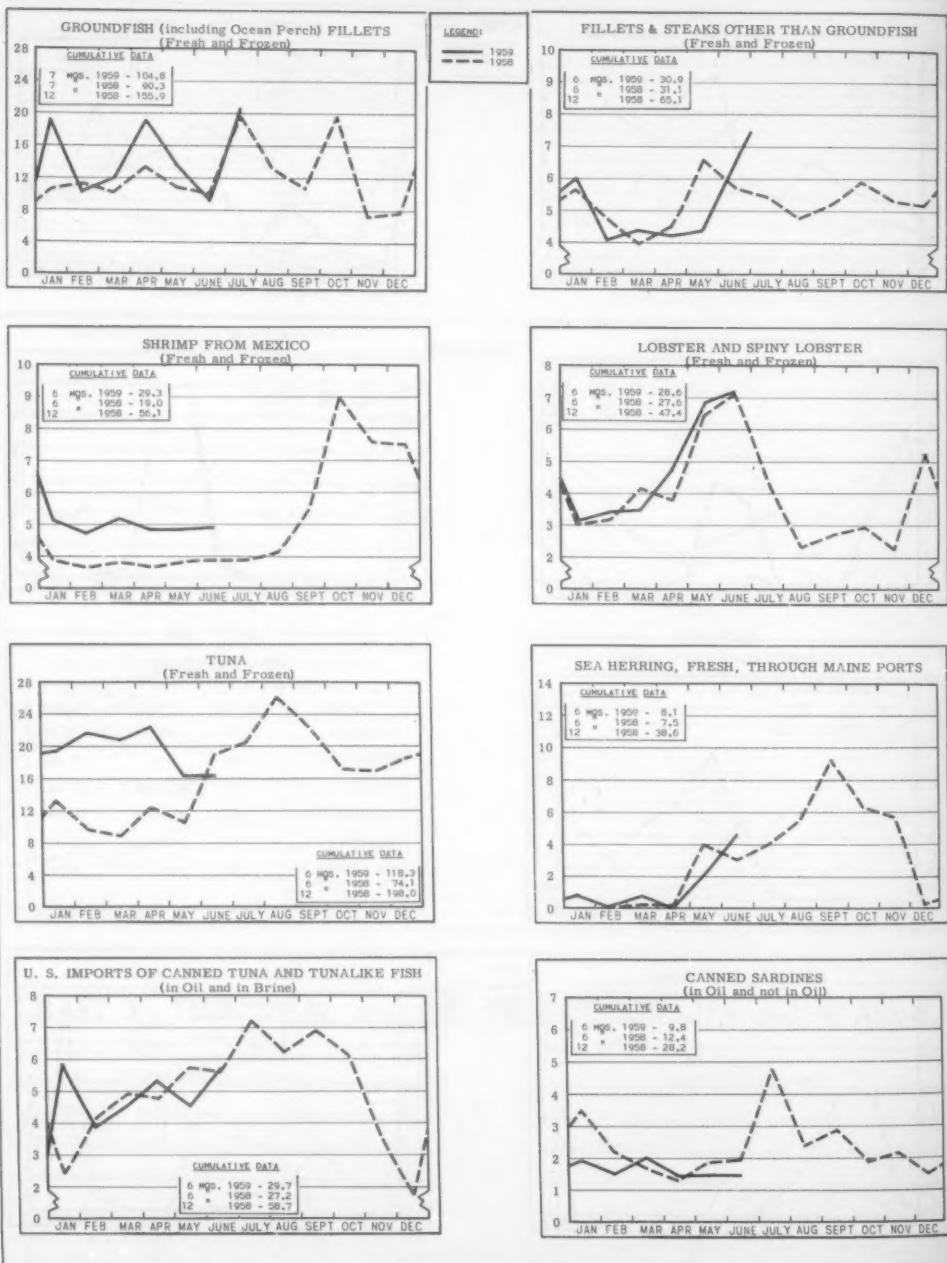
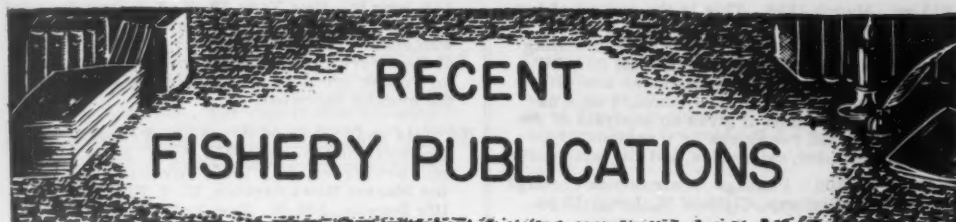


CHART 7 - U.S. FISHERY PRODUCTS IMPORTS

In Millions of Pounds





RECENT FISHERY PUBLICATIONS

FISH AND WILDLIFE SERVICE PUBLICATIONS

THESE PROCESSED PUBLICATIONS ARE AVAILABLE FREE FROM THE DIVISION OF INFORMATION, U. S. FISH AND WILDLIFE SERVICE, WASHINGTON 25, D. C. TYPES OF PUBLICATIONS ARE DESIGNATED AS FOLLOWS:

- CFS - CURRENT FISHERY STATISTICS OF THE UNITED STATES AND ALASKA
SL - BRANCH OF STATISTICS LISTS OF DEALERS IN AND PRODUCERS OF FISHERY PRODUCTS AND BYPRODUCTS.
SSR-FISH. - SPECIAL SCIENTIFIC REPORTS--FISHERIES (LIMITED DISTRIBUTION).
SEP. - SEPARATES (REPRINTS) FROM COMMERCIAL FISHERIES REVIEW.

Number	Title
CFS-1999	Mississippi Landings, 1958 Annual Summary, 3 pp.
CFS-2004	Alabama Landings, 1958 Annual Summary, 3 pp.
CFS-2006	Louisiana Landings, December 1958, 2 pp.
CFS-2027	New Jersey Landings, March 1959, 3 pp.
CFS-2040	Massachusetts Landings, 1958 Annual Summary, by ports, 16 pp.
CFS-2041	Massachusetts Landings, 1958 Annual Summary, by gear and subarea, 16 pp.
CFS-2050	Rhode Island Landings, January 1959, 3 pp.
CFS-2051	California Landings, January 1959, 4 pp.
CFS-2052	Massachusetts Landings, January 1959, 4 pp.
CFS-2053	New York Landings, March 1959, 4 pp.
CFS-2054	Alabama Landings, February 1959, 2 pp.
CFS-2059	Shrimp Landings, January 1959, 6 pp.
CFS-2060	Mississippi Landings, March 1959, 2 pp.
CFS-2064	Fish Meal and Oil, April 1959, 2 pp.
CFS-2061	North Carolina Landings, April 1959, 3 pp.
CFS-2062	Georgia Landings, April 1959, 2 pp.
CFS-2063	South Carolina Landings, April 1959, 2 pp.
CFS-2065	Massachusetts Landings, February 1959, 5 pp.
CFS-2066	Florida Landings, April 1959, 7 pp.
CFS-2067	Rhode Island Landings, February 1959, 3 pp.
CFS-2068	New York Landings, April 1959, 4 pp.
CFS-2069	Frozen Fish Report, May 1959, 8 pp.
CFS-2070	Maine Landings, April 1959, 3 pp.
CFS-2071	California Landings, February 1959, 4 pp.
CFS-2072	Texas Landings, March 1959, 3 pp.
CFS-2075	Ohio Landings, April 1959, 2 pp.
CFS-2078	Alabama Landings, March 1959, 2 pp.
CFS-2082	Texas Landings, April 1959, 3 pp.

Wholesale Dealers in Fishery Products (Revised):

- SL-7 - New Jersey, 1959.
SL-9 - Delaware, 1959.
SL-13 - North Carolina, 1959.
SL-14 - South Carolina, 1959.
SL-15 - Georgia, 1959.
SL-17 - Alabama, 1958.
SL-18 - Mississippi Coastal Area, 1959.
SL-22 - Oregon, 1959.
SL-23 - Washington, 1959.
SL-33 - Missouri (Mississippi River and Tributaries Area), 1959.
SL-39 - Tennessee, 1959.
SL-41 - Arkansas, 1959.
SL-40 - Oklahoma, 1959.
SL-43 - Alabama (Mississippi River and Tributaries Area), 1959.
SL-45 - Mississippi (Mississippi River and Tributaries Area), 1959.
SL-46 - Texas (Mississippi River and Tributaries), 1959.
SL-47 - Louisiana (Mississippi River and Tributaries), 1959.

Firms Canning:

- SL-102A - Pacific Sardines, 1958.
SL-103 - Tuna and Tunalike Fishes, 1958.
SL-105 - Alewives or Alewife Roe, 1958.
SL-106 - Shad or Shad Roe, 1958.

Canned Fish Retail Prices:

- FL-476h - May 1959, 27 pp.

Canned Fish Consumer Purchases:

- FL-478e - April 1959, 31 pp.
FL-478f - May 1959, 31 pp.

SSR-Fish. No. 272 - Doctoral Dissertations on the Management and Ecology of Fisheries, Additional Listings, 1952-55, compiled by Harvey L. Moore, 35 pp., January 1959.

SSR-Fish. No. 287 - The Electrical Resistivity Meter in Fishery Investigations, by Robert E. Lennon, 17 pp., illus., January 1959. A portable resistivity (or conductivity) meter is easily used in fishery investigations to obtain rapid and precise measurements of the electrical resistance (or conductance) of waters. These measurements can be used to estimate the total dissolved solids content of waters, to facilitate the selection of appropriate gear for efficient electrofishing, and to determine the velocity, stretch-out, dilution, and effective range of a solute over miles of a stream in conjunction with chemical reclamation operations. Applications of resistivity measurements on Appalachian streams are discussed.

SSR-Fish. No. 295 - Fish and Shellfish Consumption in Public Eating and Drinking Places, vol. II,

- 213 pp., March 1959. This is the second of two volumes reporting on the results of a survey of fish and shellfish consumption in public eating places. Volume I, issued as Special Scientific Report--Fisheries No. 218, gave an analysis of the responses to the questionnaire on a national basis. Volume II gives an analysis of the cross-tabulated responses on a regional, type-of-establishment, sales-size, and city-size basis.
- SSR-Fish-No. 300 - Passage of Salmonoids Through a Darkened Fishway, Clifford W. Long, 12 pp., illus., May 1959.
- SSR-Fish. No. 301 - The Problem of Fishway Capacity, by Robert H. Lander, 8 pp., illus., May 1959.
- Sep. No. 556 - Construction and Catch Selectivity of Albacore Gill Nets Used in the Central North Pacific.
- Sep. No. 557 - Nutritional Values of Fish-Meal Proteins and Their Relation to Processing Variables.
- Sep. No. 558 - Research in Service Laboratories (August 1959): Contains these articles--"Canned Tuna Quality Improvement Studies," "Chemical Composition of Pacific Coast Fish and Shellfish," "Control of Drip in Chilled and Frozen Fishery Products," "Freezing and Cold Storage of Pacific Oysters and Fresh-Water Fish," "New Products from Fish Oils," "Studies on Chemical Compounds Formed During Spoilage of Fish."

THE FOLLOWING SERVICE PUBLICATIONS ARE AVAILABLE ONLY FROM THE SPECIFIC OFFICE MENTIONED.

California Fishery Products Monthly Summary, May 1959, 13 pp. (Market News Service, U. S. Fish and Wildlife Service, Post Office Bldg., San Pedro, Calif.) California cannery receipts of tuna and tunalike fish, mackerel, and anchovies; pack of canned tuna, mackerel, and anchovies; market fish receipts at San Pedro, Santa Monica, and Eureka areas; California imports; canned fish, imported canned tuna, and frozen shrimp prices; ex-vessel prices for cannery fish; and American Tuna Boat Association auction sales; for the month indicated.

(Chicago) Monthly Summary of Chicago's Fresh and Frozen Fishery Products Receipts and Wholesale Market Prices, May 1959, 13 pp. (Market News Service, U. S. Fish and Wildlife Service, 565 W. Washington St., Chicago 6, Ill.) Receipts at Chicago by species and by states and provinces for fresh- and salt-water fish and shellfish; and wholesale prices for fresh and frozen fishery products; for the month indicated.

Gulf of Mexico Monthly Landings, Production, and Shipments of Fishery Products, May 1959, 6 pp. (Market News Service, U. S. Fish and Wildlife Service, 609-611 Federal Bldg., New Orleans 12, La.) Gulf States shrimp, oyster, finfish, and blue crab landings; crab meat production; LCL express shipments from New Orleans; wholesale prices of fish and shellfish on the New Orleans French Market; sponge sales; and fishery imports at Port Isabel and Brownsville, Tex., for the month indicated.

New York City's Wholesale Fishery Trade--Monthly Summary for February and March 1959, 18 pp. and 20 pp., respectively (Market News Service,

155 John St., New York 38, N. Y.) Includes summaries and analyses of receipts and prices on wholesale Fulton Fish Market, imports entered at New York City, primary wholesaler prices for frozen products, and marketing trends; for the months indicated.

Receipts and Prices of Fresh and Frozen Fishery Products at Chicago, 1958, by G. A. Albano, 63 pp., processed, July 1959. (Available free from the Market News Service, U. S. Fish and Wildlife Service, 565 W. Washington St., Chicago 6, Ill.) In the analysis of receipts of fishery products at Chicago, the author discusses the gain in 1958 fishery products receipts and carload receipts at Chicago. He also discusses sources of receipts, trends in fishery products transportation, receipts by months, receipts by species and varieties, lake trout and whitefish fishery and receipts, cold-storage inventories, imports of fresh and frozen fresh-water fish from Canada, imports of frozen groundfish fillets, and trends and developments in 1958. Also included is a table giving the names, classifications, and approximate weights of certain fishery products as used in the Chicago wholesale markets. The second section presents statistical data on fresh and frozen fishery products receipts at Chicago by species and by states and provinces of origin, states and provinces by species, species by months, states and provinces by months, totals by species, and totals by states and provinces. Receipts are tabulated by method of transportation (truck, express, and freight). A table shows the monthly range of wholesale prices of some of the leading varieties of fresh and frozen fishery products handled in the Chicago market.

Receipts of Fresh and Frozen Fishery Products at New York City's Fulton Fish Market, 1958 (Includes Statistics and Marketing Trends), by T. J. Risoli, 36 pp., processed. (Available free from the Market News Service, U. S. Bureau of Commercial Fisheries, 155 John St., New York 38, N. Y.) The first part of this annual summary discusses fishery products receipts and marketing trends in the salt-water section of New York City's wholesale Fulton Fish Market during 1958, and marketing trends in New York City's wholesale fresh-water fish market for 1958. The second part consists of a series of statistical tables giving the receipts of finfish and shellfish on the salt-water section of Fulton Fish Market, New York City, 1958; receipts by months and methods of transportation; receipts by species, methods of transportation, states and provinces; prices of selected frozen fishery products, 1958, in New York Metropolitan Area; finfish receipts by points of origin and methods of transportation; shellfish receipts by points of origin and methods of transportation; and imports of selected fresh and frozen fishery products, 1958 compared with 1957.

Seattle and Astoria--Landings, Receipts, and Value of Fishery Products, 1958, by Charles M. Reardon, 43 pp., processed. (Available free from the Market News Service, U. S. Fish and Wildlife Service, Pier 42, South, Seattle 4, Wash.) Reviews Pacific Northwest fisheries trends and their effect upon Seattle fishery products receipts for 1958, halibut landings, carload shipments of fishery products from Seattle by months, truckload shipments from Seattle by months, and

names, classifications, and approximate standards as used on Seattle wholesale market. The Astoria section presents fisheries trends and products receipts for 1958, landings and receipts, and annual totals of landings and receipts for 1957 and 1958. The report also contains a number of statistical tables on fresh and frozen salmon receipts at Seattle, halibut landings, and ex-vessel landings by the otter-trawl fleet.

THE FOLLOWING SERVICE PUBLICATIONS ARE FOR SALE AND ARE AVAILABLE ONLY FROM THE SUPERINTENDENT OF DOCUMENTS, WASHINGTON 25, D. C.

Fishery Statistics of the United States, 1957, by E. A. Power, Statistical Digest No. 44, 431 pp., illus., printed, \$2, 1959. This is the latest in a series of annual statistical reports on the fisheries of the United States and Alaska, which contains data on the catch and ex-vessel value of fishery products, employment in the fisheries, quantity of gear operated, the number of fishing craft employed in the capture of fishery products, and certain information on the production and value of manufactured fishery products and byproducts. The statistical surveys, conducted during 1958 for 1957 data, covered all sections of the United States. The catch of fishery products in all sections of the United States and Alaska during 1957 totaled approximately 4.8 billion pounds, valued at \$351 million ex-vessel--a decrease of 9 percent in quantity and 5 percent in value as compared with 1956.

Menhaden landings amounted to 1.7 billion pounds, and accounted for 35 percent of the total domestic catch of fish and shellfish. The Chesapeake area was the only region showing an increase in menhaden production.

Shrimp was again the most valuable single item taken by domestic fishermen, amounting to 204 million pounds valued at over \$73 million ex-vessel. The Gulf of Mexico is the major shrimp-producing area and accounted for 83 percent of the volume and 87 percent of the value of the total 1957 shrimp catch. Commercial quantities of small shrimp from Washington and Oregon, which became significant in 1956, registered important gains in 1957.

Several of the major food fish recorded noteworthy increases during the year: Pacific mackerel (up 12 million pounds); jack mackerel (up 6 million pounds); Maine sea herring (up 13 million pounds); and crabs (up 28 million pounds). One of the outstanding production gains made in the commercial fisheries was in the newly-developed New England otter-trawl fishery for industrial fish used in the manufacture of fish meal, oils, and animal food. During 1957, landings by otter-trawl craft of fish classified as industrial fish (189 million pounds) were 50 million pounds or 36 percent greater than in 1956. A sharp decline in the landings of menhaden, salmon, and tuna; and a falling off in the catches of anchovies, Atlantic ocean perch, haddock; Pacific sardines, and shrimp were primarily responsible for the decline in the 1957 landings as compared with the previous two years.

The pack of canned fishery products in the United States, Alaska, Hawaii, Puerto Rico, and

American Samoa in 1957 amounted to nearly 992 million pounds valued at \$336 million to the packers. Production of fresh and frozen packaged fish fillets and steaks in the continental United States totaled 154.5 million pounds, valued at 46.8 million dollars to the processors. This represented a decrease of 8.3 million pounds in volume and 579 thousand dollars in value as compared with the previous year.

United States foreign trade in fishery products in 1957 was valued at over 333 million dollars, of which 297 million dollars represented the value of imports and 36 million dollars the value of exports. The value of imported fishery products in 1957 established a new record over 1956, the former high year. Some of the most important imports during 1957 were fresh sea herring, frozen albacore, canned tuna in brine, and fresh and frozen groundfish fillets and steaks (including blocks and slabs). The value of exports of fishery products was 9 percent less than in 1956.

The economic data presented in this report are essential for use by persons engaged in the commercial fisheries and by governmental agencies concerned with the regulation and protection of commercial fisheries. Biological information included, which is important to sound fishery management, provides detailed information of fluctuations in the commercial catch by species, locality, gear, and type of craft operated.

Life History of the Threespine Stickleback GASTEROSTEUS ACULEATUS (Linnaeus) in Karluk Lake and Bare Lake, Kodiak Island, Alaska, by John Greenbank and Phillip R. Nelson, Fishery Bulletin 153 (from Fishery Bulletin of the Fish and Wildlife Service, vol. 59), pp. 537-559, illus., printed, 25 cents, 1959.

MISCELLANEOUS PUBLICATIONS

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM. CORRESPONDENCE REGARDING PUBLICATIONS THAT FOLLOW SHOULD BE ADDRESSED TO THE RESPECTIVE ORGANIZATION OR PUBLISHER MENTIONED. DATA ON PRICES, IF READILY AVAILABLE, ARE SHOWN.

ALASKA:

1957 Annual Report, Report No. 9, 123 pp., illus., printed. Alaska Department of Fish and Game, Juneau, Alaska. This report covers the activities of the Alaska Fish and Game Commission and the Alaska Department of Fish and Game for 1957. The statistical tables cover the preceding 10-year period, while the financial statement is based on the fiscal year from July 1, 1957 through June 30, 1958. The 1957 activities of the Biological Research Division continued the four field studies under way in 1956 on Taku River salmon, Kitot Bay red salmon, Southeast Alaska silver salmon, and Kodiak king crab. This report also describes predator investigation and control, commercial fisheries, and sport-fish programs. The statistical part of the report contains data on the comparative

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value of canned salmon by species, 1948-1957; number of canneries and salmon pack, 1948-1957; salmon catch by species, gear, and district, 1948-1957; poundage and value of Alaska fisheries landings, 1948-1957; and poundage and value of Alaska fisheries products prepared for market, 1948-1957. The report concludes with a discussion of future plans of the Department.

ANIMAL FEEDING:

"Exploratory Rat and Chick Bioassays of Scales from Ocean Perch and Herring as Animal Feed," by N. I. Lemack, G. E. Livingston, L. R. Parkinson, C. R. Fellers, and D. L. Anderson, article, *Food Research*, vol. 23, November-December 1958, pp. 684-692, printed. Food Research, Department of Food Technology, University of California, Davis, Calif.

ANTIBIOTICS:

"Distribution of Chlortetracycline (CTC) Antibiotic in Ice Made from Hard Waters," by R. H. Moyer, B. A. Southcott, and H. L. A. Tarr, article, *Progress Reports of the Pacific Coast Stations*, No. 112, December 1958, pp. 21-22, printed. Fisheries Research Board of Canada, Pacific Fisheries Experimental Station, 898 Richards St., Vancouver, B. C., Canada.

AUSTRALIA:

Australian Journal of Marine and Freshwater Research, vol. 10, no. 1, May 1959, 129 pp., illus., printed. Australian Journal of Marine and Freshwater Research, Commonwealth Scientific and Industrial Research Organization, 314 Albert St., East Melbourne, C. 2, Victoria, Australia. Contains, among others, the following articles: "The Populations of Australian Salmon, *Arripis trutta* (Bloch & Schneider), in Australian Waters," by W. B. Malcolm; "Factors Influencing the Settling of the Principal Marine Fouling Organisms in Sydney Harbour," by B. Wisely; and "Reproduction in Australian Pearl Oysters (*Lamellibranchia*). V--*Pinctada fucata* (Gould)," by D. J. Tranter.

BELGIUM:

Rapport Annuel sur l'Evolution de la Flotte de Peche en 1958 (Annual Report on the Progress of the Fishing Fleet during 1958), 43 pp., illus., processed in French. Ministère des Communications, Administration de la Marine, Brussels, Belgium. A statistical report on the status of Belgium's fleet of vessels used in high seas and coastal fishing.

BIOCHEMISTRY:

Fatty Alcohol Esters, by Joseph W. Rizzo, U. S. Patent 2,801,934. U. S. Patent Office, Washington 25, D. C.

"On the Formation of Amine in Fish Muscle. VII--Effect of Freezing on the Histamine Formation in the Thawed Fish Muscle," by Fuyuo Ota, and Kosuke Kaneko, article, *Bulletin of the Japanese Society of Scientific Fisheries*, vol. 24, no. 2, 1958, pp. 140-143, printed in Japanese with English abstract. Japanese Society of Scientific Fisheries, c/o Tokyo University of Fisheries, Shiba-kaigandori 6-Chome, Tokyo, Japan.

CAMBODIA:

Report on Fisheries in Cambodia, by John E. Bardach, 55 pp., illus., printed. Fisheries Service, USOM/Cambodia, Phnom Penh, Cambodia, June 1959. A detailed report on various aspects of Cambodian fish and fisheries. It covers hydrographic features underlying Cambodian fisheries, leading features of the fish fauna, fishing methods, spawning locations and migrations, food of some Cambodian fresh-water fish, fish culture, volume of production and trade, and utilization of the Cambodian fish catch. It also describes the administration of the fisheries in Cambodia and gives a summary of conservation and other recommendations. The author states that, "The report, it is hoped, will be instrumental in maintaining Cambodian fish production, in pointing to certain conservation problems now prevailing, and in suggesting some measures by which production for home consumption and export could be increased."

CANADA:

Journal of the Fisheries Research Board of Canada, vol. 16, no. 3, May 1959, pp. 247-386, illus., printed. Queen's Printer and Controller of Stationery, Ottawa, Canada. Contains, among others, the following articles: "Effects of Some Aspects of Environment on the Distribution of Juvenile Herring in Barkley Sound," by Alan S. Hourston; "The Relationship of the Juvenile Herring Stocks in Barkley Sound to the Major Adult Herring Populations in British Columbia," by Alan S. Hourston; "Variations in Annual Average Weights of British Columbia Pink Salmon, 1944-1958," by Harold Godfrey; and "Mesh Selection in Herring Gill Nets," by Steinar Olsen.

Statistiques des Pêcheries Maritimes, 1956-1957 (Maritime Fisheries Statistics, 1956-1957), 71 pp., illus., printed in English and French. Presents statistics of Quebec's maritime fisheries for the years 1956 and 1957. The first part describes 28 districts or fishing centers of the Province. The other two parts contain statistics for 1956 and 1957; the first on the quantities of fish caught and their value; the second on the labor force and equipment.

CANNED FISH:

"The Formation of Magnesium-Ammonium-Phosphate Crystals in Canned Seafoods. Part 6--Influence of Contained Substances Upon the Growth of the Formed $MgNH_4PO_4 \cdot 6H_2O$ Crystals in Test Tubes; Part 7--The Formation of the Separated Microscopic Crystal and Its Incipient Growth; Part 8--The Formation of the Crystals During Processing of the Cans," by E. Tanikawa, Y. Nagasawa, and T. Sugiyama; articles, *Bulletin of the Faculty of Fisheries, Hokkaido University*, vol. 8, no. 2, August 1957, pp. 115-146, printed. Faculty of Fisheries, Hokkaido University, Hakodate, Japan.

"The Formation of Magnesium-Ammonium-Phosphate Crystals in Canned Seafoods. Part 9--Method for Preventing the Formation of Crystals During Processing of Cans; Part 10--General Considerations," by E. Tanikawa, Y. Nagasawa, and T. Sugiyama; articles, *Bulletin of the Faculty of Fisheries, Hokkaido University*, vol. 8,

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

no. 3, November 1957, pp. 195-213, printed. Faculty of Fisheries, Hokkaido University, Hakodate, Japan.

CANNING:

"Methods for Canning Suckers," article, *Trade News*, vol. 10, no. 10, April 1958, p. 16, printed. Department of Fisheries, Ottawa, Canada.

DEHYDRATION:

"New Developments in Dehydration," by D. K. Tressler, article, *Refrigerating Engineering*, vol. 66, no. 3, March 1958, pp. 50-51, printed. Refrigerating Engineering, 40 W. 40th St., New York 18, N. Y.

DOGFISH:

"What Shall We Do with the Pesky Dogfish?" by H. L. A. Tarr, article, *Western Fisheries*, vol. 56, no. 5, August 1958, p. 18-18, illus., printed. Roy Wrigley Publications Ltd., 1104 Hornby St., Vancouver 1, B. C., Canada.

ECHO-SOUNDERS:

"Ein Neuartiges Echoaufzeichnungsverfahren" (A New Method of Recording Sounds), by H. Kietz, article, *Allgemeine Fischwirtschaftszeitung*, vol. 10, no. 17/18, April 1958, pp. 26-27, illus., printed in German. Verlag Carl Th. Gorg, Postfach 269, Bremerhaven-F, W. Germany. From the practical standpoint, it is better to record fish traces in black while the sea bottom is recorded gray. This has been developed with the Atlas echo-sounders. This method of recording has the advantage that the more weakly-recorded sea-bottom echoes can never overlap the stronger fish traces. This is even prevented when there is a heavy sea. Moreover, the new method has the advantage that by recording weak traces from the bottom, lesser dust (caused by the burning of the recording paper by echoes) is developed and the echo-sounders will not get so clogged with burned paper so quickly.

ELECTROFISHING:

"Die Elektroden und deren Anordnung bei der Elektrofischerei" (The Electrodes and Their Arrangement in Electrofishing), by H. W. Hattop, article, *Deutsche Fischerei Zeitung*, vol. 5, no. 5, May 1958, pp. 148-152, printed in German. Neumann Verlag, Radebeul, E. Germany.

"Die Möglichkeiten der Bewirtschaftung von Stehenden Gewässern und Flussläufen mit Hilfe der Elektrofischerei" (Electrofishing in Stagnant Waters and Rivers), by H. W. Hattop, article, *Zeitschrift für Fischerei und deren Hilfswissenschaften*, vol. 7, no. 1/2, 1958, 90 pp., illus., printed in German. Neumann Verlag, Radebeul, E. Germany.

FILLETS:

"Some Problems of Transient-State Conduction in the Cooling of Fish Fillets," by D. L. Nichol, article, *Journal of the Science of Food and Agriculture*, vol. 9, February 1958, pp. 78-82, printed. Journal of the Science of Food and Agriculture, Society of Chemical Industry, 14 Belgrave Square, London SW. 1, England.

FISH-LIVER OIL:

"Studies on Shark Liver Oil. Part 1--Physico-Chemical Constants and Vitamin A Content of Liver Oil from Sharks off the Karachi Coast," by Ali Maqsood, Abdul Haq, and S. Mahdihassan, article, *Pakistan Journal of Scientific and Industrial Research*, vol. 1, no. 1, January 1958, pp. 70-72, printed. Pakistan Journal of Scientific and Industrial Research, Lahore, W. Punjab, Pakistan.

FISH MEAL:

"Covering Stacks of Cured Fish Meal," by G. H. Standen, article, *Annual Report, Fishing Industry Research Institute, April-December 1958*, vol. 10, 1957, p. 24, printed. Fishing Industry Research Institute, Cape Town, Union of South Africa.

"Curtailement of Malodor from Flame Fish Meal Driers," by R. H. Wright and F. E. Murray, article, *Canadian Fisherman*, vol. 45, no. 7, July 1958, pp. 11-13, illus., printed. National Business Publications Ltd., Gardenvale, Quebec, Canada.

"La Production de Farine de Poisson en Colombie Britannique" (Fish Meal Production in British Columbia), article, *La Pêche Maritime*, vol. 37, no. 962, May 20, 1958, pp. 287-288, illus., printed in French. La Pêche Maritime, 190, Blvd. Haussmann, Paris 8, France.

FISH MEAL AND OIL:

"Some Trends in the Norwegian Fish Meal and Oil Industry," article, *Norwegian Fishing News*, vol. 5, no. 3, 1958, pp. 8-8, printed. Norwegian Fishing News, Ltd., Bergen, Norway.

FISH OIL:

"Chemical Essentials to the Discoloration of Fish Oil," by Junsaka Nonaka, article, *Journal of Tokyo University of Fisheries*, vol. 43, 1957, pp. 127-165, printed. Tokyo University of Fisheries, Shiba-kaigandori 6-Chome, Tokyo, Japan.

"Isolation and Structure of the C₁₆ Unsaturated Fatty Acids in Menhaden Body Oil," by Willy Stoffel and E. H. Ahrens, Jr., article, *Journal of the American Chemical Society*, vol. 80, December 20, 1958, pp. 8604-8608, printed. American Chemical Society, 1801 K St., N. W., Washington, D. C.

"Studies on the Nutritional and Physiological Effects of Thermally Oxidized Oils," by O. C. Johnson, E. Perkins, M. Sugai, and F. A. Kummerow, article, *Journal of the American Oil Chemists' Society*, vol. 34, no. 12, pp. 594-597, printed. The American Oil Chemists' Society, 35 E. Wacker Dr., Chicago 1, Ill.

FISH SCHOOLS:

"An Attempt to Determine the Swimming Speed of Fish Schools with the Fish Finder--Preliminary Report," by Saburo Kawada, Yozo Tawara, and Chosei Yoshimuta, article, *Bulletin of the Japanese Society of Scientific Fisheries*, vol. 24, no. 1, 1958, pp. 1-4, printed in Japanese with English abstract. Japanese Society of Scientific

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Fisheries, c/o Tokyo University of Fisheries, Shiba-kaigandori 6-Chome, Tokyo, Japan.

FLORIDA:

"Florida Fresh Water Fish and Fishing," 20 pp., illus., printed. Game and Fresh Water Fish Commission, Tallahassee, Fla. A handy booklet which discusses fresh-water sport fishing in Florida. Presents sections on popular fishing methods, favorite fishing spots, fishing Florida waters, largemouth black bass, chain pickerel, bream, shellcracker, speckled perch, redbreast, warmouth, stumpknocker, flie, and rock bass. It also covers other fresh-water fish and other information about fishing in Florida.

FOOD AND CONTAINER RESEARCH:

Activities Report, vol. 11, no. 1, first quarter, April 1959, 54 pp., illus., printed. Research and Development Associates, 1849 W. Pershing Rd., Chicago 9, Ill. Relates to food and container research and development work of the Quartermaster Food and Container Institute for the armed forces together with related information pertinent to improving military rations; also relates to activities of other governmental, industrial, or institutional groups engaged in food and container research of direct or indirect applicability to national defense. Of special interest is an article entitled "Preservation of Food by Radiation," which describes the research program dealing with the potentialities and limitations of the radiation preservation of foods. The author states that "Progress to date lies in two broad areas. First, preliminary successes have been achieved in several phases of the food radiation process which are of prime importance to the Department of Defense. Second, sound organizational groundwork has been established to encourage, organize, produce, and disseminate the information needed to irradiate food. Despite the obstacles that lie ahead, the program for the preservation of foods by radiation has shown much progress since its inception, with good hopes of final success."

FRANCE:

"Saint Jean de Luz, 1^{er} Port Thonier de France" (Saint-Jean-de-Luz, the Leading Tuna Fishing Port of France), article, *France Pêche*, vol. 40, no. 26, February 28, 1959, pp. 13-20, illus., printed in French with English abstract. France Pêche, 84, Rue Carnot, Lorient, France.

FREEZING:

"Calculating Freezing Time of Fish in Air-Blast Freezers," by F. L. Levy, article, *Journal of Refrigeration*, vol. 1, no. 3, March/April 1958, pp. 55-58, illus., printed. Foxlow Publications Ltd., 19 Harcourt St., London W. 1, England.

"Fish Handling and Freezing. III.--Changes During Freezing and Frozen Storage," by W. A. Empey, article, *Food Preservation Quarterly*, vol. 18, December 1958, pp. 76-78, printed. Commonwealth Scientific & Industrial Research Organization, Div. of Food Preservation and Transport, Hoembush, N. S. W., Australia.

"The Freezing of Cod Liver," by A. Kaminarskaya, article, *Kholodil'naya Tekhnika*, vol. 2, 1959, pp. 45-48, illus., printed in Russian with English summary. Kholodil'naya Tekhnika, c/o Four Continent Book Corp., 822 Broadway, New York 3, N. Y.

"Rates of Freezing and Temperatures of Storage," article, D. S. I. R. Food Investigation Report for 1956, pp. 11-12, printed. Her Majesty's Stationery Office, York House, Kingsway, London, W. C. 2, England, 1957. The recommended code for the quick-freezing of fish requires cooling through the critical range 32° to 23° F. in not more than 120 minutes. Recommended practice for storage is a temperature of -4° to -20° F.

"Spray- vs. Immersion-Brining of Hake Fillets for Quick Freezing," by A. G. Pienaar, article, *Annual Report, Fishing Industry Research Institute*, April-December 1956, vol. 10, 1957, pp. 16-17, printed. Fishing Industry Research Institute, Cape Town, Union of South Africa.

FREEZING AT SEA:

"Prawns Frozen at Sea," article, *Refrigeration Journal*, vol. 11, no. 9, March 1958, pp. 14-15, illus., printed. Refrigeration Journal, Australian Institute of Refrigeration, 156 Pelham St., Carlton, Victoria, Australia.

FREEZING FISH AT SEA:

"Some Modern Developments in Fish Freezing and Storage Equipment for Ships, Part 1," by M. B. F. Ranken, article, *The Fishing News*, no. 2369, September 12, 1958, p. 9; "Part 2--Modern Developments in Freezing and Storing in Trawlers," article, *The Fishing News*, no. 2370, September 19, 1958, p. 7, printed. Arthur J. Heighway Publications Ltd., Ludgate House, 110 Fleet St., London E. C. 4, England.

FROZEN FISH:

"Expressible Fluid of Fillets: Part 6--Electrophoretic Analysis of the Expressible Fluid of Cod Muscle," by J. J. Connel, article, *Journal of the Science of Food and Agriculture*, vol. 8, no. 13, December 1957, pp. 701-706; "Part 7--Freezing Damage and Protein Denaturation Under Pressure," by R. M. Love and O. Karsti; "Part 8--Cell Damage in Slow Freezing," by R. M. Love; "Part 9--Other Types of Cell Damage Caused by Freezing," by R. M. Love, articles, *Journal of the Science of Food and Agriculture*, vol. 9, no. 5, May 1958, pp. 249-268, printed. Journal of the Science of Food and Agriculture, Society of Chemical Industry, 14 Belgrave Square, London, S. W. 1, England.

GEAR:

"Experiments to See the Effect of Color and Its Depth on the Driving Net by the Centralizing Method," by Takaya Kusaka, article, *Bulletin of the Japanese Society of Scientific Fisheries*, vol. 23, no. 12, 1958, pp. 766-769, printed in Japanese with English abstract. Japanese Society of Scientific Fisheries, c/o Tokyo University of Fisheries, Shiba-kaigandori 6-Chome, Tokyo, Japan.

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"Un Nouveau Type de Chalut" (A New Type of Trawl), by Robert Lenier, article, *France Pêche*, vol. 40, no. 26, February 28, 1959, pp. 30-34, illus., printed in French with English abstract. France Pêche, 84, Rue Carnot, Lorient, France.

"The Specification of Fish Pound Boards," by G. C. Eddie and J. J. Waterman, article, *World Fishing*, vol. 7, no. 7, July 1958, pp. 65-66, printed. John Trundell Ltd., Temple Chambers, Temple Ave., London E. C. 4, England.

GENERAL:

"FTC and Guides Against Deceptive Pricing," by Charles E. Grandey, *Small Marketers Aids* no. 42, April 1959, 4 pp., printed. Small Business Administration, Washington 25, D. C. This leaflet describes the Federal Trade Commission's publication, "Guides Against Deceptive Pricing," which attempts to point out to the business community the legal boundaries of pricing representations, and put the spotlight on advertising evil. That evil--deceptive advertising--has misled the public in its purchases and worked a competitive hardship on merchants who advertise honestly. The guides are directed against nine major types of fictitious pricing: (1) savings claims; (2) pricing problem; (3) comparable merchandise; (4) special sale prices; (5) "two-for-one sales"; (6) special sales claims; (7) "factory" and "wholesale" ads; (8) fictitious pre-ticketing; and (9) comparative prices.

"How Better Business Bureaus Help Small Business," by Robert J. Bauer, *Small Marketers Aids* no. 43, pp. 1-4, printed. Small Business Administration, Washington 25, D. C., May 1959.

"The Mohole," by Willard Bascom, article, *Scientific American*, vol. 200, no. 4, April 1959, pp. 41-49, illus., printed. Scientific American, Inc., 415 Madison Ave., New York 17, N. Y. The author discusses a proposal to drill a hole through the earth's crust beneath the floor of the ocean to reach the interior of the earth. He states that a floating drilling station anchored in water three miles deep and capable of drilling into the bottom another 18,000 feet may do the job. The total reach of the drill pipe must be two miles longer than that used in the deepest hole yet drilled. But the hole will return such valuable direct evidence about the composition of the earth and its geological and biological history that it seems well worth the effort."

We Come From the Sea, by Hans Hass, translated from German by Alan Houghton Brodrick, 288 pp., illus., printed, \$6.50. Doubleday & Co., Garden City, N. Y. Picture-and-text study of marine life by marine biologist and skin-diver.

GILL NETS:

"Comparison Efficiency of Differently Colored Gill Nets in the North Sea Salmon Fishing," by A. Koike, article, *Bulletin of the Japanese Society of Scientific Fisheries*, vol. 24, no. 1, 1958, pp. 9-12, printed in Japanese with English summary. *Bulletin of the Japanese Society of Scientific Fisheries*, c/o Tsukishima, Chuo-ku, Tokyo, Japan.

ISRAEL:

Bamidgeh--Bulletin of Fish Culture in Israel, vol. 11, no. 1, April 1959, 52 pp., illus., printed in English and Hebrew. Joint Agricultural Extension Center, Division of Fisheries, Ministry of Agriculture, Tel Aviv, Israel. Contains the following articles: "Chemical Fluctuations of the Water of Fertilized and Unfertilized Fishponds in a Subtropical Climate," by B. Hefher; "The Problem of 'Wild' Spawning and Its Use in the Carp Ponds," by Aza Ben-Ari; "Instructions for the Construction and Repair of Fish Ponds," by J. Pruginin and Aza Ben-Ari; and "Rentability of Chemical Weed Control in Drainage Canals," by J. Pruginin.

Fishermen's Bulletin, no. 19, March 1959, 32 pp., illus., printed in Hebrew with English abstracts. *Fishermen's Bulletin*, P.O.B. 699, Haifa, Israel. Contains, among others, the following articles: "Chapters on the Expansion of Israel Fishing in Lake Tiberias," by M. Nun; "The Use of Copper Naphtenate and Other Copper Soaps for the Treatment of Fishing Nets," by J. H. White and B. Komarovsky; "Tuna Fishing on F/V Shinio Maru," by J. Carmel; "Experiments with the Danish Trawl Net on R.F.V. Hazwi," by D. Bernstein; "Trawler and Trawl Gear in Action," by M. Ben-Yami; "Japanese Long-Line Tuna Fishing Experiment at Eylath," by Z. Fried; and "Israeli Shrimp Export (1957-1958)."

JAPAN:

Bulletin of Tokai Regional Fisheries Research Laboratory, no. 22, December 1958, 81 pp., illus., printed in Japanese with English summaries. Tokai Regional Fisheries Research Laboratory, Tsukishima, Chuo-Ku, Tokyo, Japan. Includes, among others, the following articles: "Bottom Character of Pearling Bed in the Arafura Sea. I--Size Distribution and Mud Contents of the Thursday Island and East Regions," by Y. Takemura; "On the Optimum Temperature and Salinity for the Development of Hard Clam, *Meretrix meretrix lusoria* (Roding)," by J. Sagara; "Studies on Trawl-Net. II--Determination of the Angle of Inclination of Triangular Brackets Giving the Optimal Angle of Attack to the Otter Board," by S. Takayama and T. Koyama; "Fundamental Study of the Detection of Fish by Supersonic Wave. I--Preliminary Tests on the Supersonic Reflection of Fish and Fishing Net with a 50 kc. Supersonic Fish Finder," by S. Takayama and C. Yoshimuta; "The Vitamin B₆ Content of Fish Liver," by M. Yanase; and "Fluorodermin, a Newly Found Fluorescent Hydrocarbon in the Skin of Fishes," by S. Hirao and R. Kikuchi.

Encyclopaedia Zoologica Illustrata in Colours, vol. 2, "Pisces," by Ichiro Tomiyama and Tokiharu Abe; "Prochordata," by Takashi Tokioka, 478 pp., illus., printed, \$25. Hokuryukan, Tokyo, Japan, 1958. This volume illustrates the fishes and prochordates of Japan and is divided into three sections. The first section covers 912 species of marine fishes; the second section, on aquarium fishes, covers 108 species; and the third section, on Prochordates, contains illustrations of 135 species. For each species,

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the scientific and common names, a brief description, and size and distribution are given.

Memoirs of the Faculty of Fisheries of Kagoshima University, vol. 7, February 1958, 215 pp., illus., printed in Japanese with summaries in English. The Faculty of Fisheries, Kagoshima University, Kagoshima, Japan. Contains, among others, the following articles: "Studies on the Life Histories of the Flying-Fishes Found in the Adjacent Waters of Japan--I," by Sadahiko Imai; "Correlation Between the Movement and Appearance of Fish School," by Toshiro Kuroki; "Fundamental Studies on the Relations Between Underwater Sound and Fish Behaviour. III--About the Echoless-Wall of Aquarium," by Toshiro Kuroki; "On the Fluctuation of Mackerel-Long-Line Catch Under the Influence of the Solar-Eclipse," by Toyotaka Tanoue; and "On the Fishing Condition of Tuna and Marlin at the Sea Fronts off the Mangoli and Taliabu Islands--I," by Soichi Ueda and Tatsuo Tamari.

LIGHTS AND FISHING:

"Japanese Find Blue or Green Lights Catch Most Shellfish," article, The Fishing News, no. 2365, August 15, 1958, p. 13, printed. Arthur J. Heighway Publications Ltd., Ludgate House, 110 Fleet St., London E. C. 4, England.

"Reactions of Fish to Artificial Light, with Special Reference to Large Herring and Spring Herring in Norway," by O. Dragesund, article, Journal du Conseil, vol. 23, no. 2, April 1958, pp. 213-226, illus., printed. Journal du Conseil, Charlottenlund Slot, Denmark.

LOBSTERS:

The Lobster, HOMARUS AMERICANUS, and the Red Crab, GERYON QUINQUEDENS, in the Off-shore Waters of the Western North Atlantic, by William C. Schroeder, 17 pp., illus., printed. (Reprinted from Deep-Sea Research, vol. 5, 1959, pp. 266-282.) Pergamon Press Ltd., London, England. A population of lobsters, large enough to support commercial fishing, is present off the east coast of the United States along the outer shelf and upper slope between the eastern part of Georges Bank and the offing of Delaware Bay. Although there are all sizes from "shorts" to very large, a much greater percentage than in the shoal water populations are large. Since 1953, several otter trawlers have been fishing offshore exclusively for lobsters and have made very substantial catches in this area. A deep-water crab, as yet unexploited, might become the source of a commercial fishery along the North and Middle Atlantic coast. It inhabits depths between 150-700 fathoms or more and ranges from the offing of Nova Scotia to Virginia and southward, perhaps in diminishing numbers, at least to Cuba.

"Working a Florida Crawfish Boat Can Pay," by W. A. King Webster, article, World Fishing, vol. 8, no. 6, June 1959, pp. 63-71, illus., printed. John Trundell Ltd., St. Richards House, Eversholt St., London N. W. 1, England.

MARINE ANIMALS:

Dangerous Marine Animals, by Bruce W. Halstead, 176 pp., illus., printed, \$4. Cornell Maritime Press, Cambridge, Md. 1959. This book is divided into four chapters: Dangerous Marine Animals--Our Knowledge of the Past; Marine Animals that Bite; Marine Animals that Sting; and Marine Animals that are Poisonous to Eat. This is followed by a short general selected bibliography on important aspects or groups that have been discussed. In every case, the species identification, geographical distribution, habits, and noxious characteristics are briefly discussed along with the medical aspects, treatment, and prevention.

MIDWATER TRAWL:

"Control of the Midwater Herring Trawl," article, World Fishing, vol. 8, no. 6, June 1959, pp. 44-46, illus., printed. John Trundell Ltd., St. Richards House, Eversholt St., London N. W. 1, England. An account of some Russian experiments which are claimed to have led to much greater accuracy in trawling operations, especially for fleet fishing.

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"The Study on the Color of Fishing Net. I--Observations on the Passage of Fishes Through a Colored Net," by Kenji Kanda, Atushi Kolke, and Mitio Ogura, article, Bulletin of the Japanese Society of Scientific Fisheries, vol. 23, no. 10, 1958, pp. 612-616, printed in Japanese with English abstract. Japanese Society of Scientific Fisheries, c/o Tokyo University of Fisheries, Shiba-kaigandori, 6-Chome, Tokyo, Japan.

"The Study of the Color of Fishing Nets: Part 2--Behavior of Fish Shoals in the Neighborhood of a Colored Net; Part 3--Effect of Depth of Color of a Net on the Behavior of Fish Schools Near the Net," by K. Kanda, A. Kolke, and M. Ogura; "Part 4--A Change in Illumination and Behavior of a Fish School Near the Net," by K. Kanda and A. Kolke; articles, Bulletin of the Japanese Society of Scientific Fisheries, vol. 24, no. 1, 1958, printed in Japanese with English summaries. Bulletin of the Japanese Society of Scientific Fisheries, c/o Tsukishima, Chuo-ku, Tokyo, Japan.

ODORS:

"Tests on the Transfer of Odors and Flavors in Refrigerated Cabinets," by J. Gutschemidt, article, Kaltetechnik, vol. 10, no. 8, August 1958, pp. 255-262, illus., printed. Kaltetechnik, Verlag C. F. Muller, Karlsruhe, Germany.

PACKAGING:

"Packaging Material Odor Can Affect Flavor and Sales of Frozen Fish," by L. B. Sjostrom, Quick Frozen Foods, vol. 20, no. 12, July 1958, pp. 131-134, printed. E. W. Williams Publications, Inc., 82 Wall St., New York 5, N. Y.

PARASITES:

BIVESICULA TARPONIS, a New Trematode in the Tarpon, MEGALOPS ATLANTICUS (Cuv. & Val.), from the West Coast of Florida, by Franklin Sogandares-Bernal and Robert F. Hutton, 5 pp.

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

illus., printed. (Reprinted from *The Journal of Parasitology*, vol. 45, no. 1, February 1959, pp. 114-118.) Florida State Board of Conservation Marine Laboratory, Maritime Base, Bayboro Harbor, St. Petersburg, Fla.

Studies on Helminth Parasites of the Coast of Florida. I--Digenetic Trematodes of Marine Fishes from Tampa and Boca Ciega Bays with Descriptions of Two New Species, by Franklin Sogandares-Bernal and Robert F. Hutton, 16 pp., illus., printed. (Reprinted from *Bulletin of Marine Science of the Gulf and Caribbean*, vol. 9, no. 1, March 1959, pp. 53-68.) Florida State Board of Conservation, Marine Laboratory, St. Petersburg, Fla.

POISONOUS FISH:

"Wanted: Poisonous Fish," by Ralph Segman, article, *Science News Letter*, vol. 75, no. 26, June 27, 1959, pp. 407, 410, illus., printed. Science Service, Inc., 1719 N St., NW., Washington 6, D. C. A unique "fishing expedition" has begun a hunt for venomous and poisonous fish. The author states that "A whole new arsenal of drugs may be squeezed out of deadly fish chemicals."

PORTUGAL:

Boletim da Pesca, vol. XII, no. 63, June 1959, 146 pp., illus., printed in Portuguese. Gabinete de Estudos das Pescas, R. S. Bento, 644, 4^a -Esq., Lisbon, Portugal. Contains, among others, the following articles: "Aspectos Tecnológicos da Preparação de Bacalhau desde a Captura a Secagem" (Technological Aspects of the Processing of Cod from Its Capture to Drying), by A. Torres Botelho; and "Da Evolução das Instalações Frigoríficas nos Arrastões Portugueses de Pesca do Alto" (Development of Cold-Storage Installations of the Portuguese High Seas Trawl Fishery), by Adriano Duque Monteiro Leite.

Cooperativa dos Armadores da Pesca da Baleia, Relatório e Contas do Exercício de 1958 (Whaling Vessel Owner's Cooperative, Statement of Operations in 1958), 12 pp., printed in Portuguese. Cooperativa dos Armadores da Pesca da Baleia, Lisbon, Portugal.

Gremio dos Armadores da Pesca de Arrasto, Relatório e Contas do Exercício de 1958 e Orçamento para 1959 (Trawler Owners' Guild, Statement of Operations for 1958 and Budget for 1959), 50 pp., printed in Portuguese. Gremio dos Armadores da Pesca de Arrasto, Lisbon, Portugal.

Gremio dos Armadores da Pesca da Baleia, Relatório e Contas do Exercício de 1958 e Orçamento para 1959 (Whaling Vessel Owners' Guild, Report of Operations in 1958 and Budget for 1959), 35 pp., printed in Portuguese. Gremio dos Armadores da Pesca da Baleia, Lisbon, Portugal.

PRESERVATION:

Chemical Preservation of Foods, by Hugh L. A. Tarr, Studies in 1957 from the Stations of the Fisheries Research Board of Canada, FRB 499, 14 pp. printed. Fisheries Research Board of Canada, Ottawa, Canada.

"Efficacy of Some Antibiotics as Preservatives for Fresh Tunny," by Noboru Takatsuka, Tadashi Tawara, and Hokoto Ono, article, *Bulletin of the Japanese Society of Scientific Fisheries*, vol. 24, no. 3, 1958, pp. 221-226, printed in Japanese with English abstract. Japanese Scientific Fisheries, c/o Tokyo University of Fisheries, Shiba-kaigandori 6-Chome, Tokyo, Japan.

QUALITY:

"Die Bacteriologische Gestelheid van Geokochte Gebakken vis" (The Bacteriological Condition of Fried Fish), by Br. Melanius and Br. Ansbartus, article, *Voeding*, vol. 19, no. 3, March 1958, pp. 93-97, printed in Dutch. Voeding, Koninkrijks-negracht 42, The Hague, Netherlands.

"Effect of Chlortetracycline (CTC) Antibiotic on the Keeping Quality of Lingcod Stored in Refrigerated Sea Water," by E. G. Baker, B. A. Southcott, and H. L. A. Tarr, article, *Progress Reports of the Pacific Coast Stations*, No. 112, December 1958, pp. 15-17, printed. Fisheries Research Board of Canada, Pacific Fisheries Experimental Station, 898 Richards St., Vancouver, B. C., Canada.

"Further Study of the Influence of Short Storage Periods, 3 Days to 2 Weeks at 15° F., on the Quality of Frozen Cod Stored at 0° F.," by W. J. Dyer, D. I. Fraser, and W. A. MacCallum, article, *Journal of the Fisheries Research Board of Canada*, vol. 14, no. 6, November 1957, pp. 925-929, printed. Queen's Printer and Controller of Stationery, Ottawa, Canada. Storage for periods of 3 to 14 days at 15° F. caused a very definite deterioration in the quality of frozen fish held under conditions that simulate refrigerated car transportation. This deterioration is equivalent to a loss of 2 to 3 months out of the 2 to 8 months of storage life that normally can be expected from commercially-frozen cod fillets that are stored continuously at 0° F.

"Grading for Quality. Part 1--Trimethylamine Values of Fillets Cut from Graded Fish," by C. H. Castell, M. F. Greenough, R. S. Rodgers, and A. S. MacFarlane, article, *Journal of the Fisheries Research Board of Canada*, vol. 15, no. 4, July 1958, pp. 701-716, illus., printed. Queen's Printer and Controller of Stationery, Ottawa, Canada.

"Studies on Freshness Determination of Fish Meat by the Distillation Ratio of Volatile Acids, Part 8--On the Form of Volatile Acids in Fish Meat," by S. Asakawa, article, *Bulletin of the Japanese Society of Scientific Fisheries*, vol. 23, nos. 7/8, 1957, pp. 463-465, printed in Japanese with English summary. Japanese Society of Scientific Fisheries, c/o Tsukishima, Chuo-ku, Tokyo, Japan.

"Time-Temperature Tolerance of Frozen Foods. XV--Method of Using Temperature Histories to Estimate Changes in Frozen Food Quality," by W. B. VanArsdel and D. G. Guadagni, article, *Food Technology*, vol. 13, January 1959, pp. 14-19, printed. Food Technology, The Garrard Press, 510 No. Hickory, Champaign, Ill.

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

REFRIGERATION:

"International Survey on Refrigeration Equipment and Activities, 1957," section, *Bulletin de l'Institut International du Froid*, vol. 39, no. 2, 1959, pp. 557-607, printed in English and French. Institut International du Froid, 177, Boulevard Malesherbes, Paris (17^e), France. The second part of the results of a general survey of refrigeration activities in various countries made in 1958. The first part was published in issue no. 1 of the *Bulletin*, 1959.

Kholodil'naya Tekhnika (Refrigeration Journal), vol. 3, 1959, 80 pp., illus., printed in Russian with English summaries. Four Continent Book Corp., 822 Broadway, New York 3, N. Y. Contains, among others, the following articles: "Experimental Investigation of the Freezing-on of Ice in Thin Layers," by N. Kudryashev and "The Centrifugal Purging of Refrigerating Brines of Corrosion Products," by N. Lipatov and N. Mizereetskii.

"On the Stability of the Red Skin Pigment of Fish Kept in Ice or Refrigerator," by Y. Tsuchiya and K. Hong, article, *Refrigeration* (Japan), vol. 33, no. 271, September 1958, pp. 1-6, illus., printed. Nihon Reito Kyokai (Japanese Society of Refrigeration), No. 3, 1-Chome, Ginza Nishi, Chuo-ku, Tokyo, Japan.

SALMON:

Sampling of 1958 B. C. Salmon Catches and Escape-ments for Age and Sex Composition, by T. H. Bilton, M. P. Shepard, and D. W. Jenkinson, circular no. 52, May 1959, 6 pp., illus., processed. Fisheries Research Board of Canada Biological Station, Nanaimo, B. C., Canada.

SOUTH PACIFIC:

"Norfolk Island Fisheries Survey," by H. van Pel, article, *South Pacific Commission Quarterly*, vol. 9, no. 2, April 1959, pp. 21, 38, illus., printed, single copy 30 U. S. cents. South Pacific Commission, Box 5254, G.P.O., Sydney, Australia. A brief article describing the fish which are plentiful around Norfolk Island in the South Pacific area. The author states that transport and marketing are the main problems in the development of commercial fisheries on the island. A whaling station has been established on Norfolk Island and its allotted quota is 120 whales a year. These are humpbacks, caught near the shore during their migrations to and from warmer waters near the equator.

STARFISH:

"Biological Studies on the Population of the Starfish, *Asterias amurensis*, in Sendai Bay," by Masayoshi Hatanaka and Masaya Kosaka, article, *The Tohoku Journal of Agricultural Research*, vol. 9, no. 3, January 1959, pp. 159-178, illus., printed. Faculty of Agriculture, Tohoku University, Sendai, Japan.

STERILIZATION:

"A Esterilizacao de Conservas de Peixe pelo Calor" (Heat Sterilization of Canned Fish), by J. Freixo, article, *Conservas de Peixe*, vol. 13, no. 150, September 1958, pp. 19-20, printed in

Portuguese. *Conservas de Peixe*, Regueirao dos Anjos 68, Lisbon, Portugal.

STICKWATER:

"Storage of Stickwater Concentrate," by G. M. Dreosti and A. M. Lewis, article, *Annual Report, Fishing Industry Research Institute, April-December 1958*, vol. 10, 1957, pp. 30-31, printed. Fishing Industry Research Institute, Cape Town, Union of South Africa.

TASMANIA:

The Sea Fisheries Regulations, 1950, 32 pp., printed. (Reprinted from *Tasmanian Government Gazette*, July 5, 1950, pp. 1966-1997.) Government Printer, Hobart, Tasmania, Australia.

TRADE AGREEMENTS:

Trade Agreements Manual (A Summary of Selected Data Relating to Trade Agreements Negotiated by the United States Since 1934). Third Edition, Miscellaneous Series TC 1.16/2:T67, 38 pp., printed, 20 cents. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) United States Tariff Commission, Washington, D. C., 1959.

TRAWLERS:

"Gefriertrawler mit Heckaufschleppe von Russischen Werften" (Freezing Trawler with Stern Slipway from Soviet Yards), article, *Hansa*, vol. 95, no. 37, September 1958, pp. 1789-1791, illus., printed in German. C. Schroeder und Co., Stubbenhuk 10, Hamburg 11, W. Germany. To enlarge the utilization of fish, a series of new factoryships, with stern chutes for hauling in the nets, are being built in the U.S.S.R. These ships, though similar to the Pushkin class, carry 20 percent less crew (102 persons). The fish are filleted, packaged, and frozen; the offal is reduced to meal; and liver oil is extracted. Some of the selected livers are canned and the rest is treated in a liver-oil plant with an extractive capacity of 1.6 tons a day. The fish-meal plant has a capacity of 20 tons of offal a day.

TRAWLING:

"Pinta - Ja Valivesi Trooli" (Surface and Mid-Water Trawl), by A. F. Aalberg, article, *Kalomiehlin Viesti*, nos. 1 and 2, February 6 and March 16, 1958, printed in Finnish. Kalomiehlin Viesti, Kotka, Finland.

TUNA:

Morphometric Comparisons Among Yellowfin Tuna, NEOTHUNNUS MACROPTERUS, from the Eastern Tropical Pacific Ocean, by Gordon C. Broadhead, 39 pp., printed in English and Spanish. (Reprinted from *Inter-American Tropical Tuna Commission Bulletin*, vol. III, no. 8, pp. 355-391.) Inter-American Tropical Tuna Commission, LaJolla, Calif., 1959.

Morphometric Comparison of Skipjack from the Central and Eastern Tropical Pacific Ocean, by Richard C. Hennemuth, 66 pp., illus., printed in English and Spanish. (Reprinted from *Inter-American Tropical Tuna Commission Bulletin*, vol. III, no. 8, pp. 241-304.) Inter-American Tropical Tuna Commission, LaJolla, Calif., 1959.

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

The Relationships Between Length and Weight of Yellowfin Tuna (NEOTHUNNUS MACROPTERUS) and Skipjack Tuna (KATSUWONUS PELAMIS) from the Eastern Tropical Pacific Ocean, by Bruce M. Chatwin, 48 pp., illus., printed in English and Spanish. (Reprinted from *Inter-American Tropical Tuna Commission Bulletin*, vol. III, no. 7, pp. 307-352.) Inter-American Tropical Tuna Commission, La Jolla, Calif., 1959.

"Spectral Reflectance Studies of the Heme Pigments in Tuna Fish Flesh, Some Characteristics of the Pigments and Discoloration of Tuna Meat," by John J. Naughton, Harry Zeitlin, and Michael M. Frodyma, article, *Journal of Agriculture and Food Chemistry*, vol. 6, December 1958, pp. 933-938, printed. American Chemical Society, 1801 K St., NW., Washington, D. C.

"Studies on Canned Tuna. Part 1--Determination of Various Components in Canned Tuna; Part 2--On the pH Determination of Canned Tuna Liquids," by M. Kochi and S. Era, article, *Journal of the Shimonoseki College of Fisheries*, vol. 7, no. 1, November 1957, pp. 33-42, printed in Japanese with English summary. Shimonoseki College of Fisheries, Yoshimi, Shimonoseki City, Japan.

TURKEY:

Balık ve Balıkçılık (Fish and Fishery), vol. 7, no. 6, June 1959, illus., printed in Turkish with English table of contents. Balık ve Balıkçılık, Yeni Valde Han. Kat 5, Yeni Postane Karsisi, Istanbul, Turkey. Contains, among others, the following articles: "General Effects of Technological Developments on Fisheries," by Bedia Taneri; "About the Technical Problems of Our Fish Canning Industry (Part V)," by A. Baki Ugur; "Tuna in Turkish Sea-Waters and Its Catch (Part III)," by M. İlham Artuz; "Sarda sarda and Its Catch (Part IV)," by Sitki Uner; and "Photographing the Deep Sea Creatures."

Balık ve Balıkçılık (Fish and Fishery), vol. 7, no. 7, July 1959, 26 pp., illus., printed in Turkish with table of contents in English. Balık ve Balıkçılık, Yeni Valde Han. Kat 5, Yeni Postane Karsisi, Istanbul, Turkey. Contains, among other items, the following articles: "About the Technical Problems of Our Fish Canning Industry (Part VI)," by A. Baki Ugur; "Tuna in Turkish-Sea-Waters and Its Catch (Part IV)," by M. İlham Artuz; "Some Information about Packing Cans," by Fehmi Ersan; "About Sharks (Part 1)," by Sitki Uner; and "Among Amateur and Professional Fishermen: An Interview with Sirri Hitay."

UNDERWATER TV:

"Underwater TV and the Fisheries" (Part 1), by Jay Russell, article, *World Fishing*, vol. 8, no. 6, June 1959, pp. 40-43, illus., printed. John Trundell Ltd., St. Richards House, Eversholt St., London N.W. 1, England. This two-part article describes some of the experiments in which the underwater TV camera has been used, and shows clearly the increasingly valuable role which this research tool can play in adding to knowledge of fish behavior and gear.

UNITED KINGDOM:

Herring Industry Accounts, 1957-58, 7 pp., printed. Her Majesty's Stationery Office, London, England.

Scottish Sea Fisheries Statistical Tables, 1958,

47 pp., printed, 5s. (about 70 U. S. cents). Her Majesty's Stationery Office, 13a Castle St., Edinburgh 2, Scotland, 1959. Contains 24 statistical tables of the fish landed and cured, vessels and fishermen, and creek returns. Tables 1 through 17 cover quantity and value of fish landed by British and foreign vessels; landings of British vessels according to method of fishing, 1938-58; quantity, value and average value of each kind of fish landed by British vessels in 1913, 1938, and 1951-1958; quantity and value of each kind of fish landed in specific districts by British vessels of various types; quantity of each kind of fish landed from and expenditure of fishing effort in each fishing region by British vessels; quantity of each kind of fish landed by foreign vessels from each fishing region and quantity and value of fish landed by each nationality; and seasonal landings of herring. Tables 18 through 24 cover quantity of herring cured from 1913 through 1958; quantity and value of white fish cured and herring cured in each district, according to method of cure; fishing vessels; fishermen employed; greatest number of vessels and persons employed by districts in herring fishing; and vessels, fishermen, and quantity and value of fish landed in creeks.

The White Fish Authority, 46 pp., illus., printed.

The White Fish Authority, Lincoln's Inn Chambers, 2/3 Cursitor St., London, E.C.4, England. This booklet is about the white fish industry, which is concerned not only with white fish proper, or demersal fish as it is called, but also with pelagic fish other than herring, and with shellfish. It is very attractively illustrated and tells about the white fish that is eaten in Britain, and the waters where it is caught; about the ways of catching, processing and distributing it; and about the organization and the men who carry out this essential work.

White Fish Authority, Eighth Annual Report and Accounts for the Year Ended 31st March, 1959, 51 pp., printed. Her Majesty's Stationery Office, London, England. Covers the activities and functions of the White Fish Authority for the fiscal year ending March 31, 1959, its income, expenditures, and fishery loans. Also includes sections on production of fishery products, marketing and distribution, research and experiments, training courses, and investigations.

WEST INDIES:

West Indies Fisheries Bulletin, No. 2, March-April 1959, 38 pp., processed. Ministry of Natural Resources and Agriculture, Federal House, Port-of-Spain, Trinidad, W. I. Contains, among other items, an article entitled "Fish Culture Prospects in Trinidad and Tobago." A brief outline of existing inland fisheries is given in this article and the potential for development of four island fisheries is discussed. Of these, fish culture or fish farming shows the greatest potential. The historical background of fish culture is recorded and reference made to the basic problems faced in establishing fish culture as part of the Trinidad economy. Methods of cultivation of tilapia developed at the Bamboo

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Grove Station are described with particular reference to preparation of ponds, stocking, fertilization, and harvesting, and a breakdown of cost of production shown. Brief mention is made of the likely areas in Trinidad and Tobago where fish culture may be established on a commercial basis. Other news items include tuna long-line experiments in Antigua, capture of albacore in Barbados, deep-sea fishing in Barbados, and related subjects.

WHALE MEAT:

"Biochemical Conditions of Whale Meat Before or After Freezing and Cold Storage of Frozen Meat," by Kazuo Tanaka and Takeo Tanaka, article, *Journal of Tokyo University of Fisheries*, vol. 42, 1958, pp. 83-88, printed. Tokyo University of Fisheries, Shiba-kaigandori 6-Chome, Tokyo, Japan.



CONTENTS (CONTINUED)

	Page		Page
FOREIGN (Contd.):		FEDERAL ACTIONS (Contd.):	
U. S. S. R.:		Department of Labor:	
Whaling Super-Factoryship Completed	89	Wage Increase Recommended for Fish Canning and Processing Workers in American Samoa	95
United Kingdom:		Department of the Treasury:	
Imports of California Canned Sardines Opposed by British Committee	89	Bureau of Customs:	
Plan for Development of Pilchard Industry Initiated	89	Decision Rendered on Classification of Imported Fish Blocks	96
Technologist Predicts That Future Trawlers will be Equipped with Freezers	90	Definition of Air-Tight Containers for Imported Frozen Fishery Products Clarified	96
Trawler Owners Agree to Supply Fish for Soviet Contract	90	Eighty-Sixth Congress (First Session)	96
Venezuela:		FISHERY INDICATORS:	103
Estimated Fishery Landings and Utilization, 1958	90	Chart 1 - Fishery Landings for Selected States	103
Sardine Landings and Canned Pack, 1957	91	Chart 2 - Landings for Selected Fisheries	104
Otter Trawl Gear Regulations Revised	91	Chart 3 - Cold-Storage Holdings and Freezings of Fishery Products	105
Viet-Nam:		Chart 4 - Receipts and Cold-Storage Holdings of Fishery Products at Principal Distribution Centers	106
New Shrimp Freezing Plant to Export to the United States	92	Chart 5 - Fish Meal and Oil Production - U. S. and Alaska	106
Landings and Foreign Trade in Fishery Products, 1958	92	Chart 6 - Canned Packs of Selected Fishery Products	107
Canned Sardine Market	93	Chart 7 - U. S. Fishery Products Imports	108
FEDERAL ACTIONS:	95	RECENT FISHERY PUBLICATIONS:	109
Department of Commerce:		Fish and Wildlife Service Publications	109
Coast and Geodetic Survey:		Miscellaneous Publications	111
First Edition of Small-Chart Series 101, Potomac River	95		



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CONTENTS (CONTINUED)

	Page		Page
TRENDS AND DEVELOPMENTS (Contd.):		FOREIGN (Contd.):	
Shrimp:		Japan (Contd.):	
Stains Used to Mark Shrimp for Migration Studies . . .	42	Canners Scale Down Proposed Pack of Canned White-	
Texas Vessels Dispute Over Wages Settled	42	meat Tuna	66
Striped Bass:		Consignments of Canned Tuna for April-June 1959 . .	66
East Coast Research	42	Tuna Export Regulatory Council Planned	67
Transportation:		Joint Sales Company for Frozen Yellowfin Tuna Ex-	
New Railway Express Agency Contract Approved by		ports	67
Railroads	43	Method for Detecting Green Meat in Raw Tuna Found	68
United States Fishery Landings, January-May 1959 . .	43	Fishermen Seek Albacore on Distant Grounds	68
U. S. Foreign Trade:		Summer Albacore Landings Below Normal	69
Edible Fishery Products, May 1959	45	World-Wide Tuna Fishing Cruise Planned	69
Imports of Canned Tuna in Brine Under Quota as of		Mackerel-Pike Canners Planning to Limit Pack Next	
July 4	45	Season	69
Groundfish Fillet Imports, June 1959	45	Mackerel-Pike Canning Plans Finalized	70
U. S. Production of Fish Sticks and Portions, April-		Export Prospects for Canned Crab Meat This Year . .	70
June 1959	46	Plans to Advertise Canned Fish in Foreign Countries .	70
Vessels:		Plans Indefinite for Advertising Tuna in the United States	71
Market for United States-Built Fishing Vessels in		Studies on Marketing of Certain Fishery Products in	
Mexico and Peru Poor	47	United States Planned	71
Virginia:		New Tuna Long-Liner Completed	71
Biologists Experiment with Mesh Size of Crab Pots . .	48	Company Expands Tuna Fishing Fleet	73
Whaling:		Loans for Construction of Fishing Vessels in 1958 . .	73
Pacific Coast Whaling Season Open	49	Second Tuna Vessel for the Soviet Union Completed . .	73
Wholesale Prices, July 1959	49	Tuna Fishermen's Federation Opposes Redeployment	
FOREIGN:	51	of Salmon Fishermen	73
International:		Disposal of Four Salmon Fleets Considered	74
Fisheries Trade Fair:		North Pacific Salmon Fishing Firms Apply for Permits	
To be Held in Copenhagen, September 25-October 4,		to Fish for Tuna in Fiji Islands Area	75
1959	51	Price of Tuna Fishing Rights Rising Steeply	75
Food and Agriculture Organization:		Japanese-Moroccan Company to Trawl for Shrimp and	
Fishery Cooperatives Meeting Held at Naples, Italy .	51	Bottom Fish in South Atlantic	75
International Labor Organization:		More Japanese Fishing Trawlers to Operate off North-	
Commercial Fishermen Labor Instruments Adopted		west African Coast	75
by Conference	52	Swiss Ask for Technical Cooperation to Produce Tuna	
International Oceanographic Congress:		Products	76
Meets in New York August 30 to September 12 . . .	52	New Tuna Vessel to Fish in Indian Ocean	76
International Pacific Halibut Commission:		Bering Sea Trawler Activity Increasing	76
First Season in Areas 2 and 1B Closed	52	Canned Fish to be Included Again in Burma Reparations	
Fishing in Area 3A Ended August 1, 1959	53	Trading Companies Oppose Rainbow Trout Control	
Trade Agreements:		System	77
Swedish-Norwegian Trade Agreement for 1959 In-		Survey of Earnings by Japanese Fishermen	77
cludes Fishery Products	53	North Pacific Whaling Trends	78
Whaling:		Fishery Notes from Trade Press in June	78
Quota Apportionment Talks End Without Agreement .	54	Agar-Agar Industry Trends	79
Eleventh Annual Meeting of International Whaling		Korea:	
Commission	54	Shrimp Production and Foreign Trade	79
Australia:		United States Loan for Small Business Includes Fish-	
Frozen Shrimp Exports, 1956/57-1957/58	56	ing Industry	80
Belgian Congo:		Mexico:	
Canned Sardine Market	57	Merida Shrimp Fishery Trends, June 1959	80
Brazil:		New Fish Meal Plant Established in Carmen	80
Japanese-Brazilian Whaling Enterprise Acquires Two		Morocco:	
Catcher Boats	58	Sardine Vessels Stop Fishing	80
Canada:		Netherlands:	
Marine Oil Production, Foreign Trade and Consumption,		Frogmen Study Trawl-Net Fishing	81
1958	58	Norway:	
Chile:		Fisheries Project in India to be Continued	81
Legislation Drafted to Promote Fishing Industry . . .	59	Pakistan:	
Two United States Firms Interested in Developing Fish-		Fishing Equipment Imported Through Cooperative Ex-	
eries	60	empt from Duty and Sales Tax	82
Cuba:		Freezing and Processing Plants Being Built	82
Closed Season on Spiny Lobster Ends	60	Philippines:	
Closed Seasons for Shrimp, Oysters, and Tortoisess . .	60	Canned Fish Retail and Wholesale Prices, June 18, 1959	
Ecuador:		Canned Sardine Prices	83
Canned Sardine and Salmon Imports	61	Portugal:	
Ethiopia:		Canned Fish Exports, January-March 1959	84
Development of Commercial Fishing Industry Planned .	62	Canned Fish Pack, January-March 1959	84
French Guiana:		Sardine Fleet Sails After Settlement of Contract Dis-	
Development of Shrimp Fishery Planned	62	pute	84
Greenland:		South-West Africa:	
Facilities for Fishing Industry to be Expanded	63	Fishery Landings and Production, 1958	84
Hong Kong:		Spain:	
Fisheries Trends, First Quarter of 1959	64	Vigo Fisheries Trends, April-June 1959	85
Iceland:		Sweden:	
Herring Fishery Trends	64	Loan Fund for Fishermen Increased	87
India:		Tunisia:	
Experiment with Thailand Carp in West Bengal Waters	65	Eight Trawlers Purchased in Italy	87
Indonesia:		Tuna Cannery to Replace Portuguese Labor	88
Canned Sardine Market	65	Uganda:	
Japan:		Nylon Nets and Mechanization Double Fish Catch . . .	88
Canned Lightmeat Tuna Price Cut Considered	65	Union of South Africa:	
Cut in Price for Lightmeat Canned Tuna Opposed . . .	68	Exports of Marine Oils, 1958	88

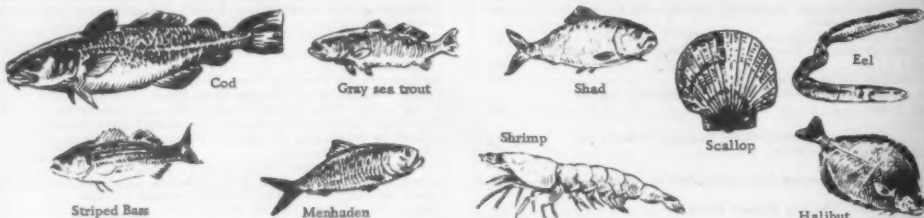
Contents Completed Page 120.

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FISHING FOR FOOD

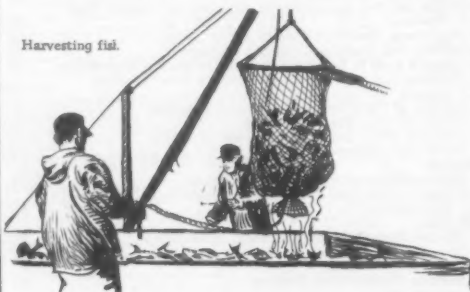
Circular 55, *Conservation Notes--Fishing for Food*, describes briefly the need for conservation of the fishery resources and the work of the Bureau of Commercial Fisheries and other fact-finding organizations concerned with orderly harvesting and protection of the available fish.

Men have been fishing for thousands of years but know comparatively little about fish and what affects their abundance and movements. "Sea culture" is a new science and the restlessness of the ocean complicates the efforts.



The supply of fish in the ocean is not inexhaustible and man must practice conservation in the sea just as he is beginning to practice conservation on land.

A most important fact which the fishery conservationist must learn is the "maximum sustainable yield" of each species--that is, the greatest number which can be harvested each year and leave enough for harvesting the next year and the next. The conservationist must also know when and where the fish are available; and know when, where, and how many ahead of time and inform the fishermen how to prepare for big harvests or small, as conditions warrant.



But knowing "when, where and how many" is only part of the work of the fishery conservationist. He must be able to tell the fishing industry how to make the best possible catch without damage to the resource; how to get the product to the family table with minimum loss of fish or quality; and how to make the best industrial use of fish not presently used for human food.

Intriguing mysteries which must be solved include: the reason why some species suddenly disappear from their haunts and are missing for years to reappear suddenly in great numbers; the reason for heavy mortality of a species when known conditions appear normal; the "spark" which causes the "red tide" organism to suddenly increase in numbers, killing millions and millions of fish.

Some recognized dangers: **Predators**--such as squawfish awaiting young salmon at a river mouth; starfish and drills ruining an oyster harvest; green crabs killing clams; sea lamprey ruining Great Lakes trout fisheries. **Obstructions**--dams blocking fish runs; irrigation outlets and power turbine intakes diverting fish from their course. Silt which covers spawning grounds and shellfish beds or which ruins aquatic plants by making the water too murky for sunlight to penetrate; water fluctuations which drown out or dry up spawning areas; storms; human activity; domestic and industrial pollution; careless use of pesticides.



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